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Nouchi

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(54) **INDOOR UNIT OF AIR CONDITIONING APPARATUS**

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(73) Assignee: **Daikin Industries, Ltd.**, Osaka (JP)

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F25D 17/06	(2006.01)
F24D 5/10	(2006.01)
F24F 1/00	(2011.01)
F24F 13/06	(2006.01)

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CPC ***F24F 1/0014*** (2013.01); *F24F 2001/0037* (2013.01); *F24F 2013/0616* (2013.01)

(58) **Field of Classification Search**
USPC 454/256; 62/426; 165/53
IPC F24F 1/0014,5/0017, 5/0007, 1/02, F24F 2001/0037, 2013/0616
See application file for complete search history.

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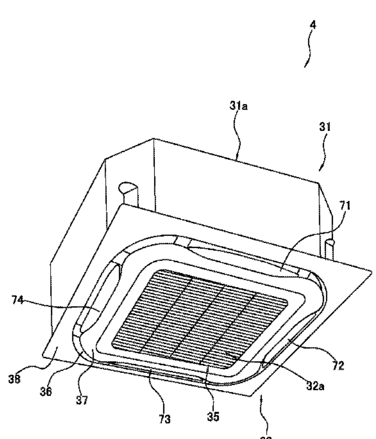
(74) *Attorney, Agent, or Firm* — Global IP Counselors

(57) **ABSTRACT**

An indoor unit of an air conditioning apparatus includes an door unit casing and an airflow direction adjusting member. The indoor unit casing has an air inlet and an air outlet with an edge on an air inlet side forming a bulge toward the air inlet. The airflow direction adjusting member covers at least part of the air outlet. The airflow direction adjusting member has an edge on the air inlet side forming a bulge toward the air inlet.

9 Claims, 16 Drawing Sheets



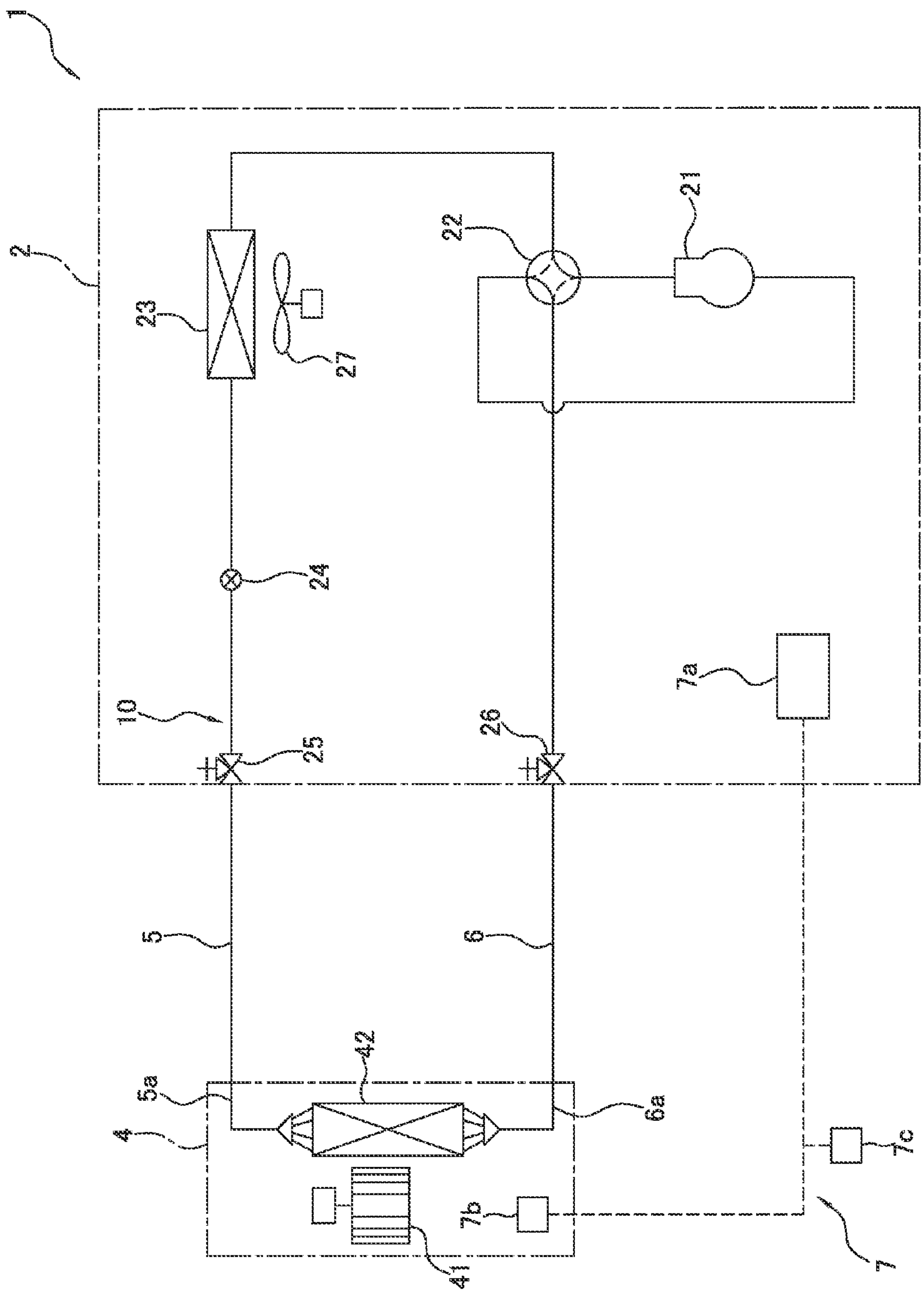


FIG. 1

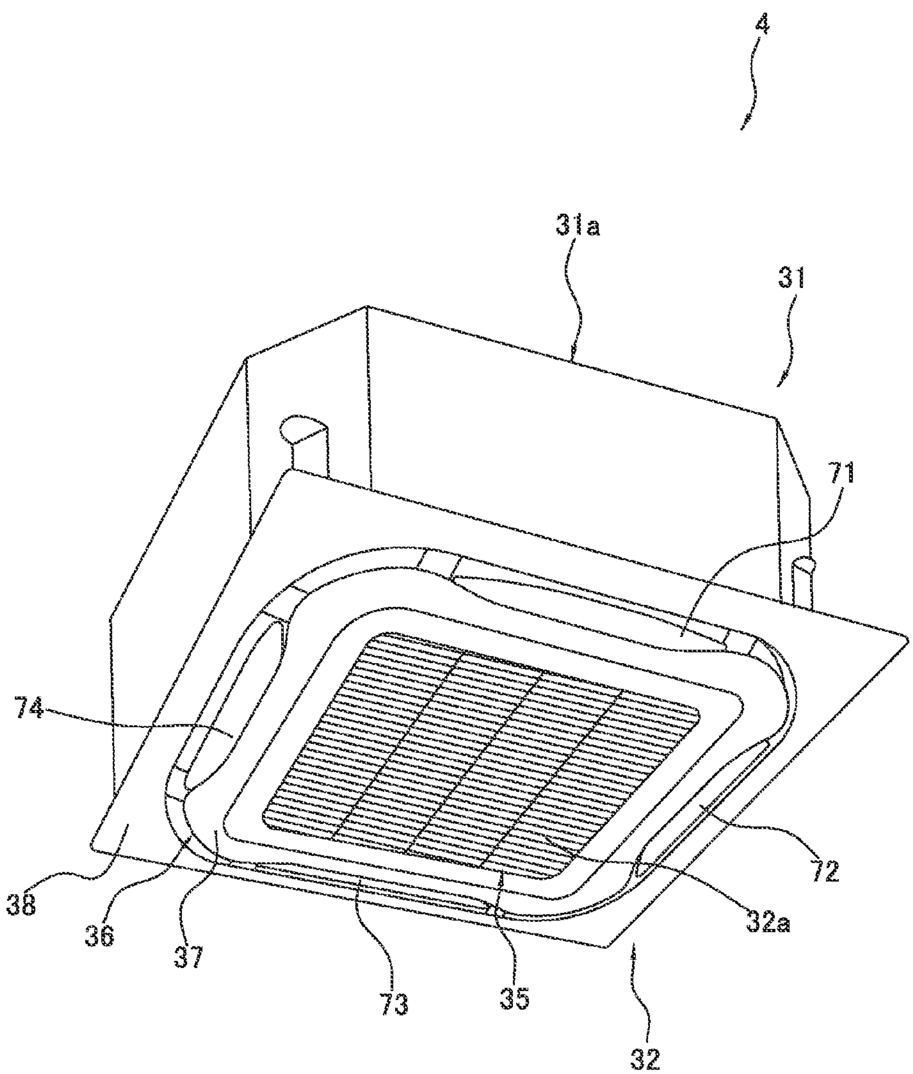


FIG. 2

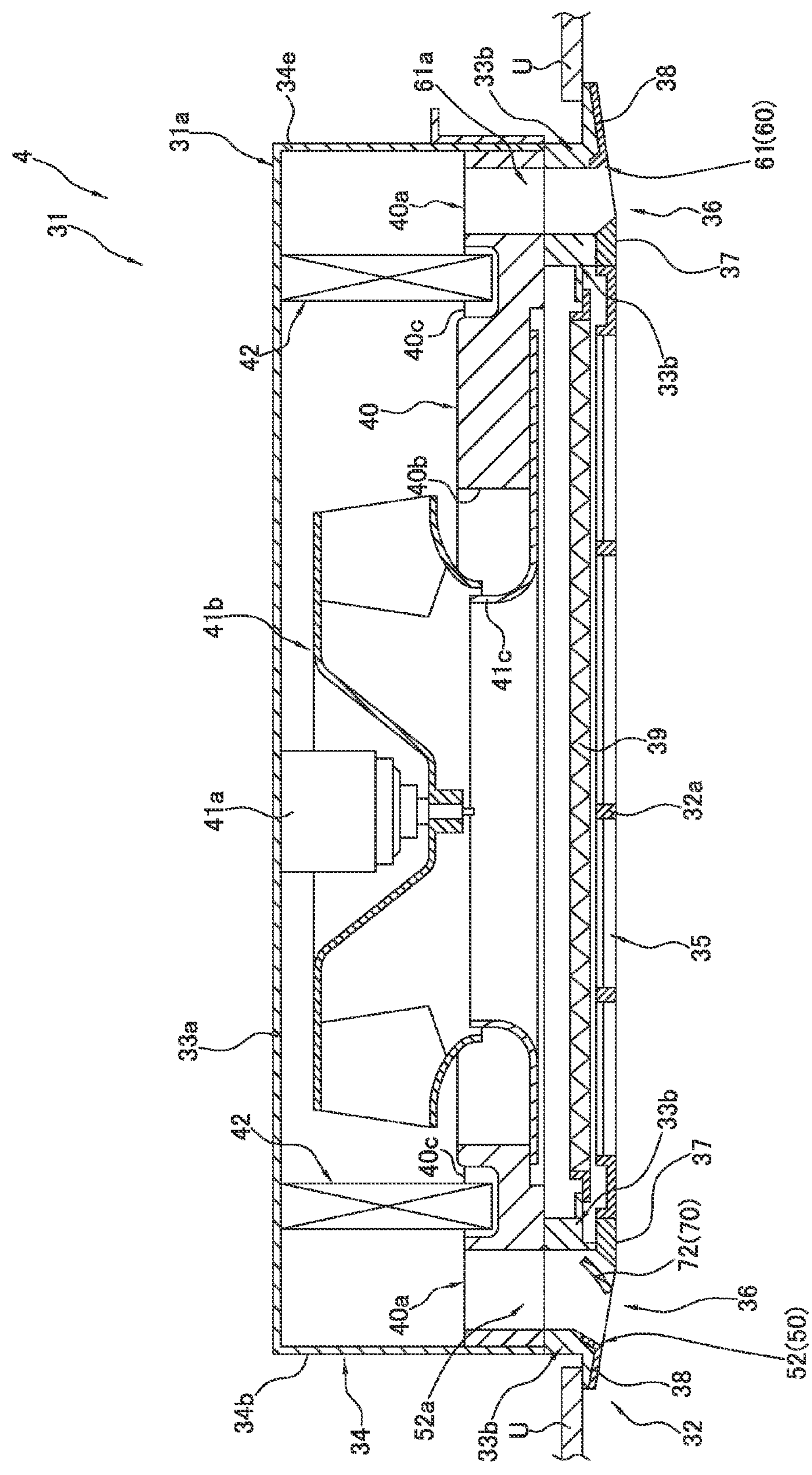

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FIG. 3

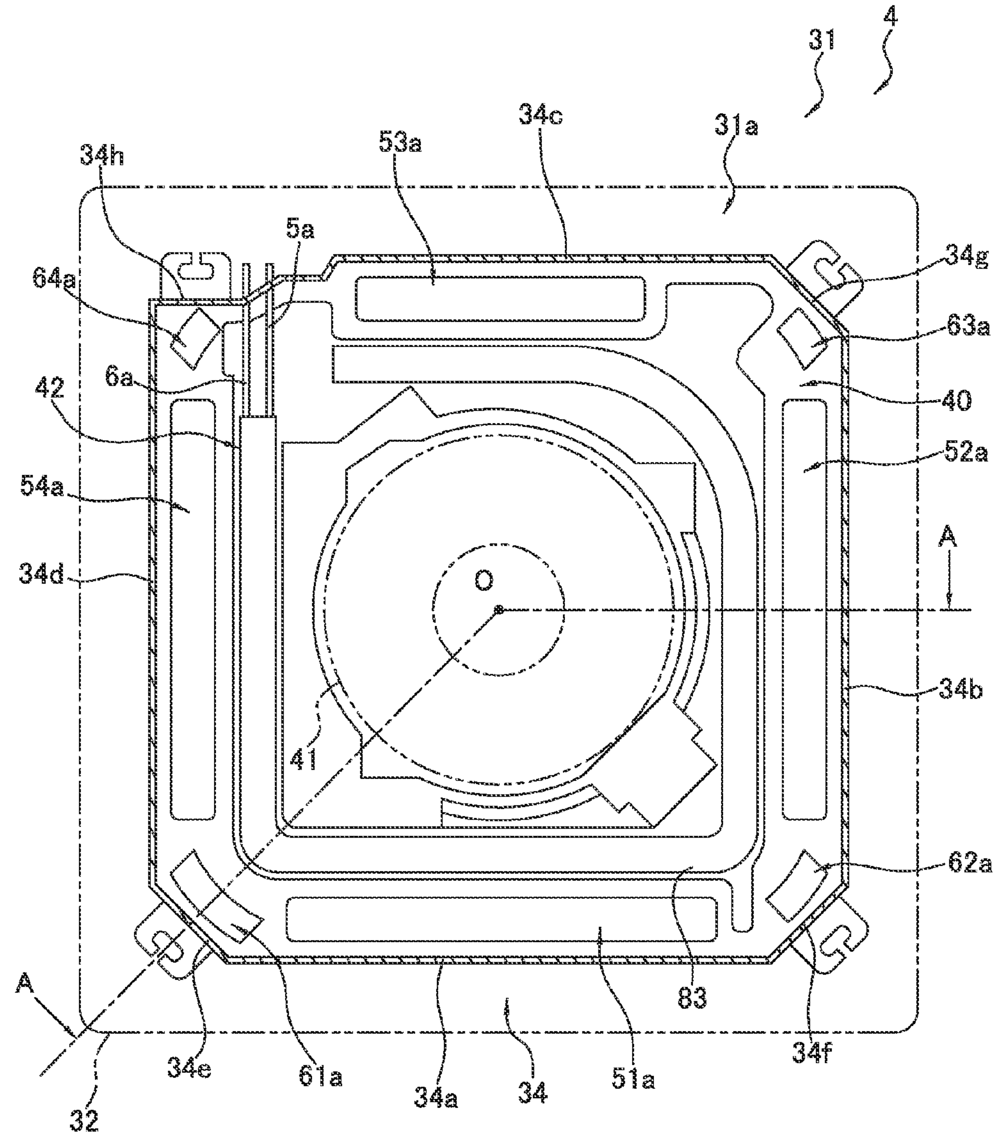
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FIG. 4

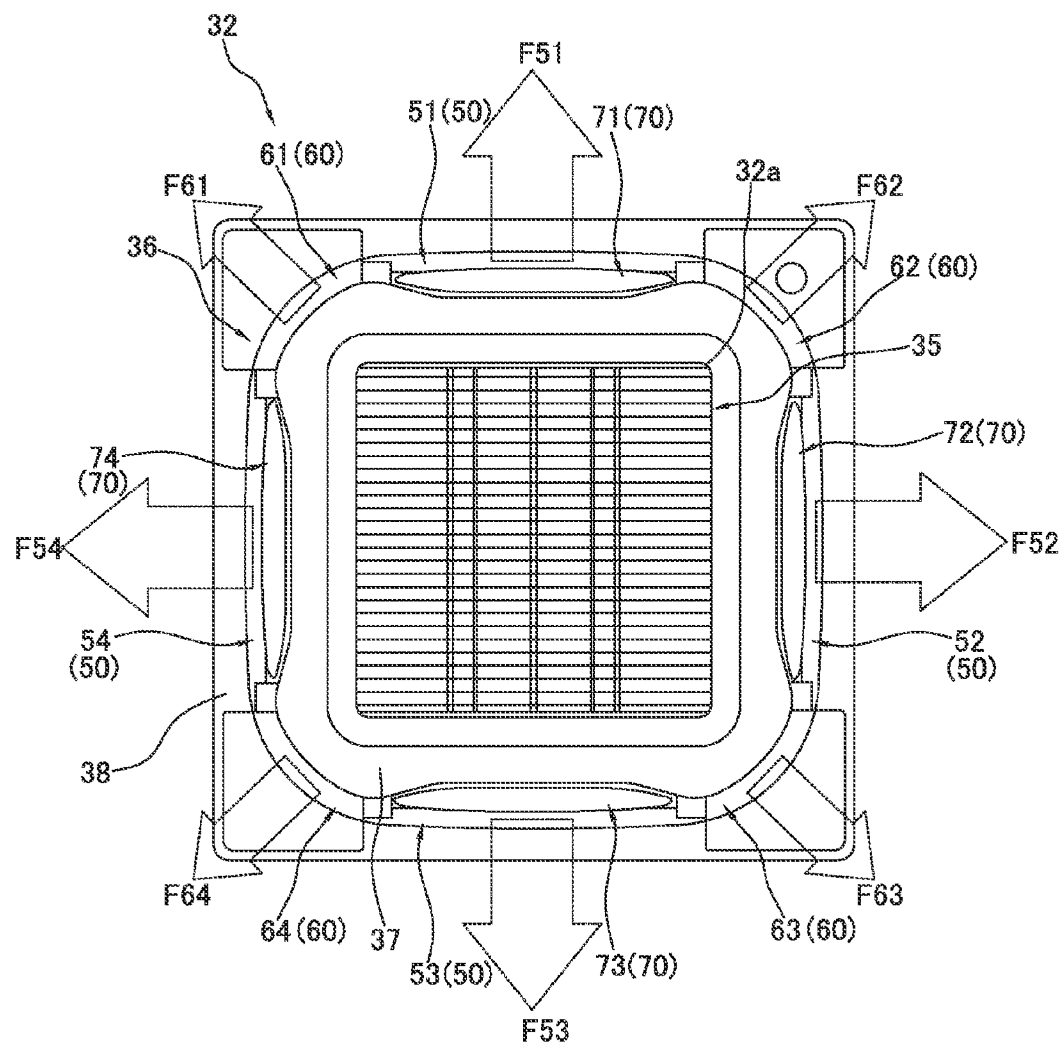
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FIG. 5

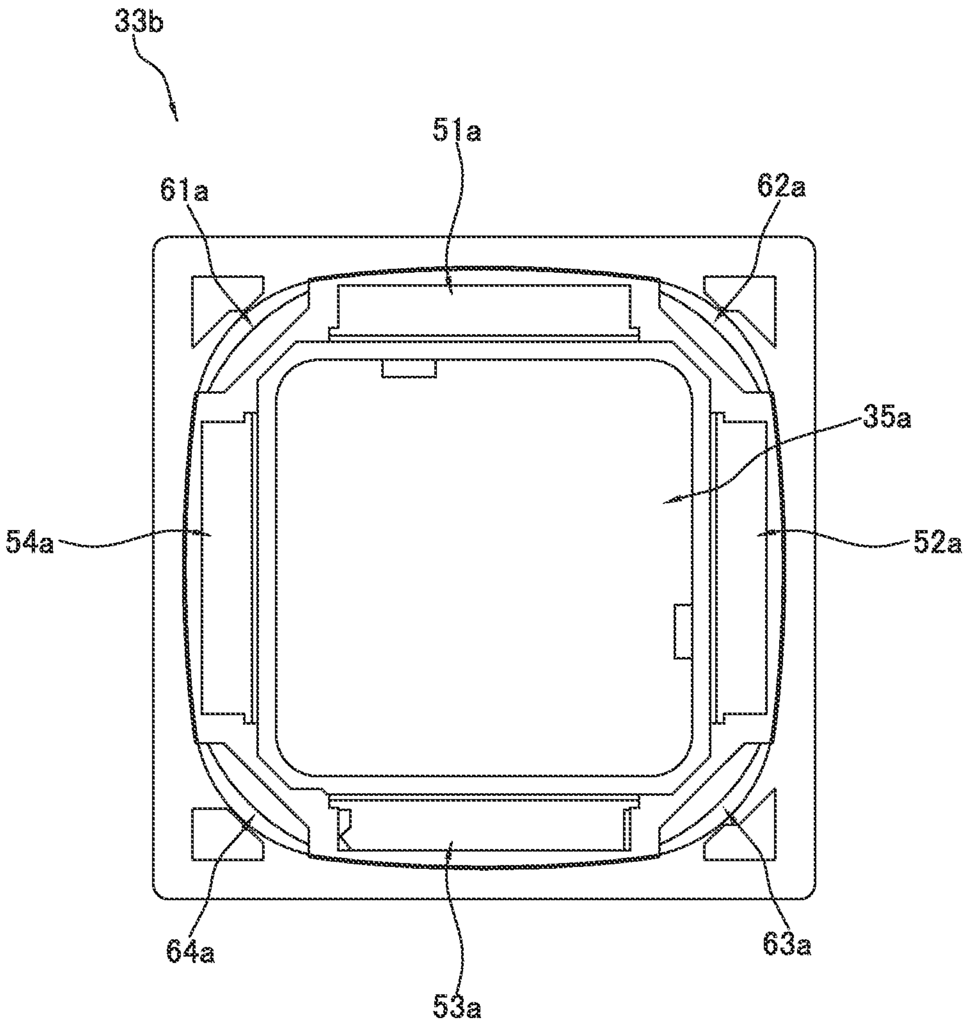

FIG. 6

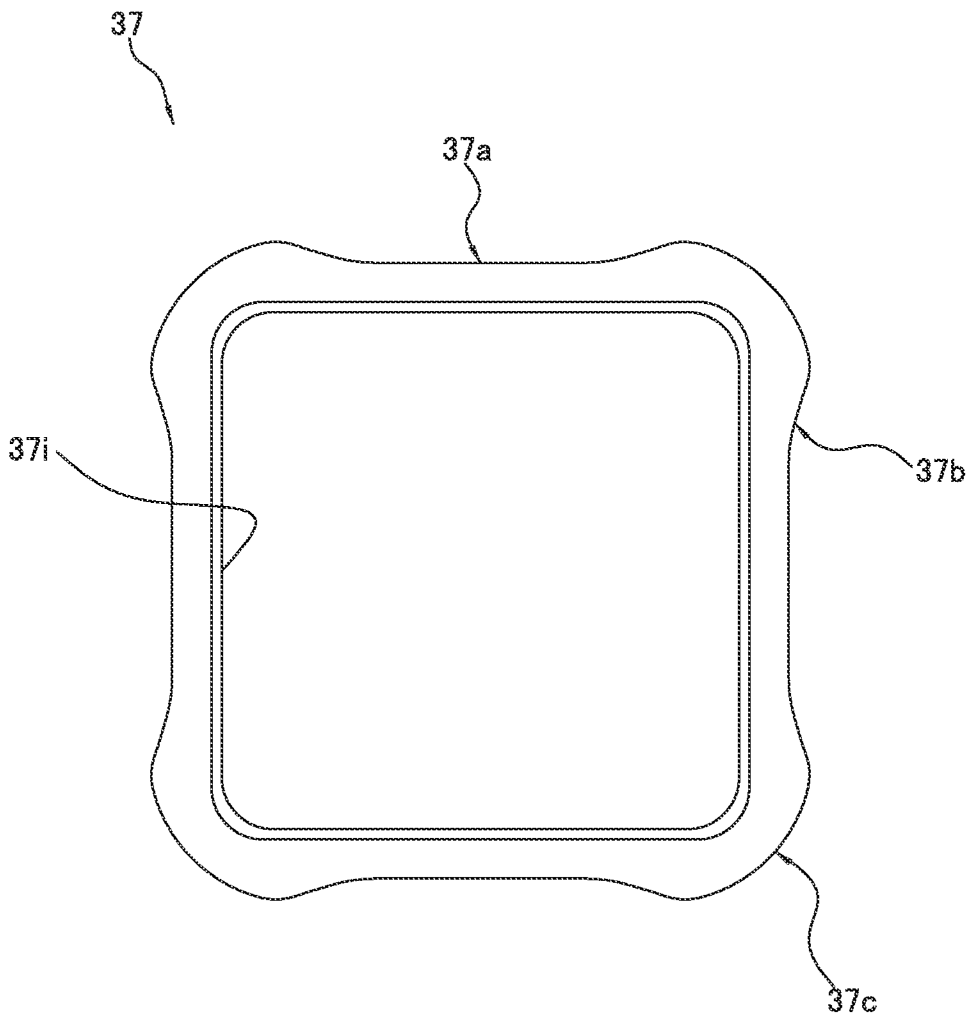

FIG. 7

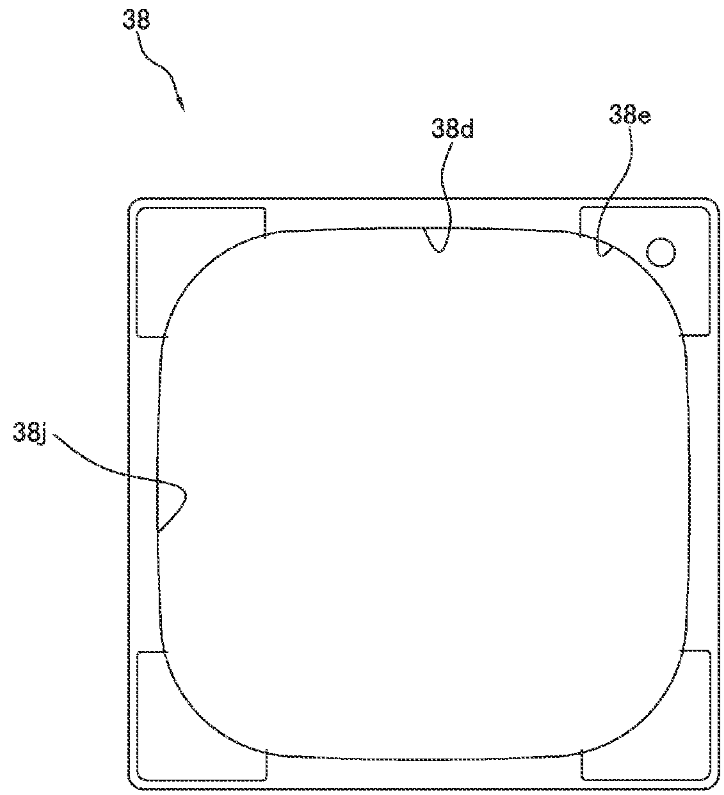

FIG. 8

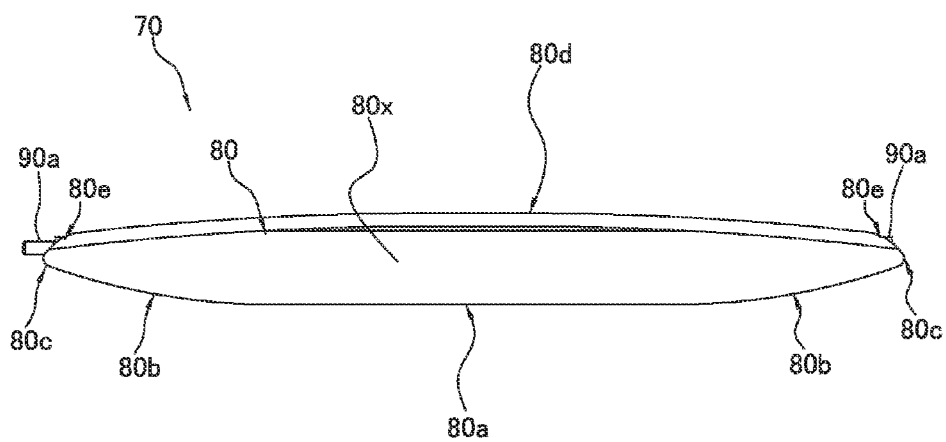

FIG. 9

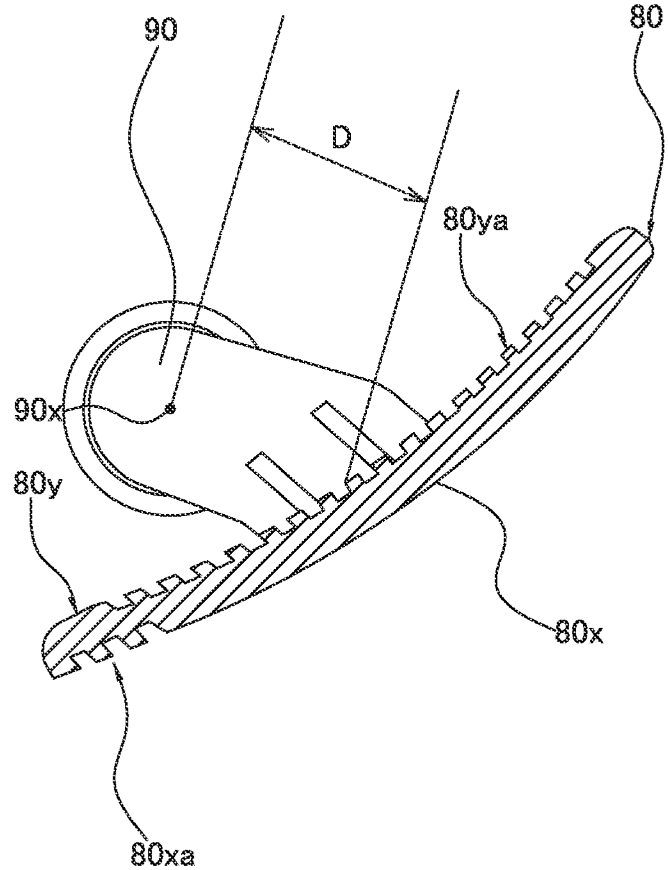

FIG. 10

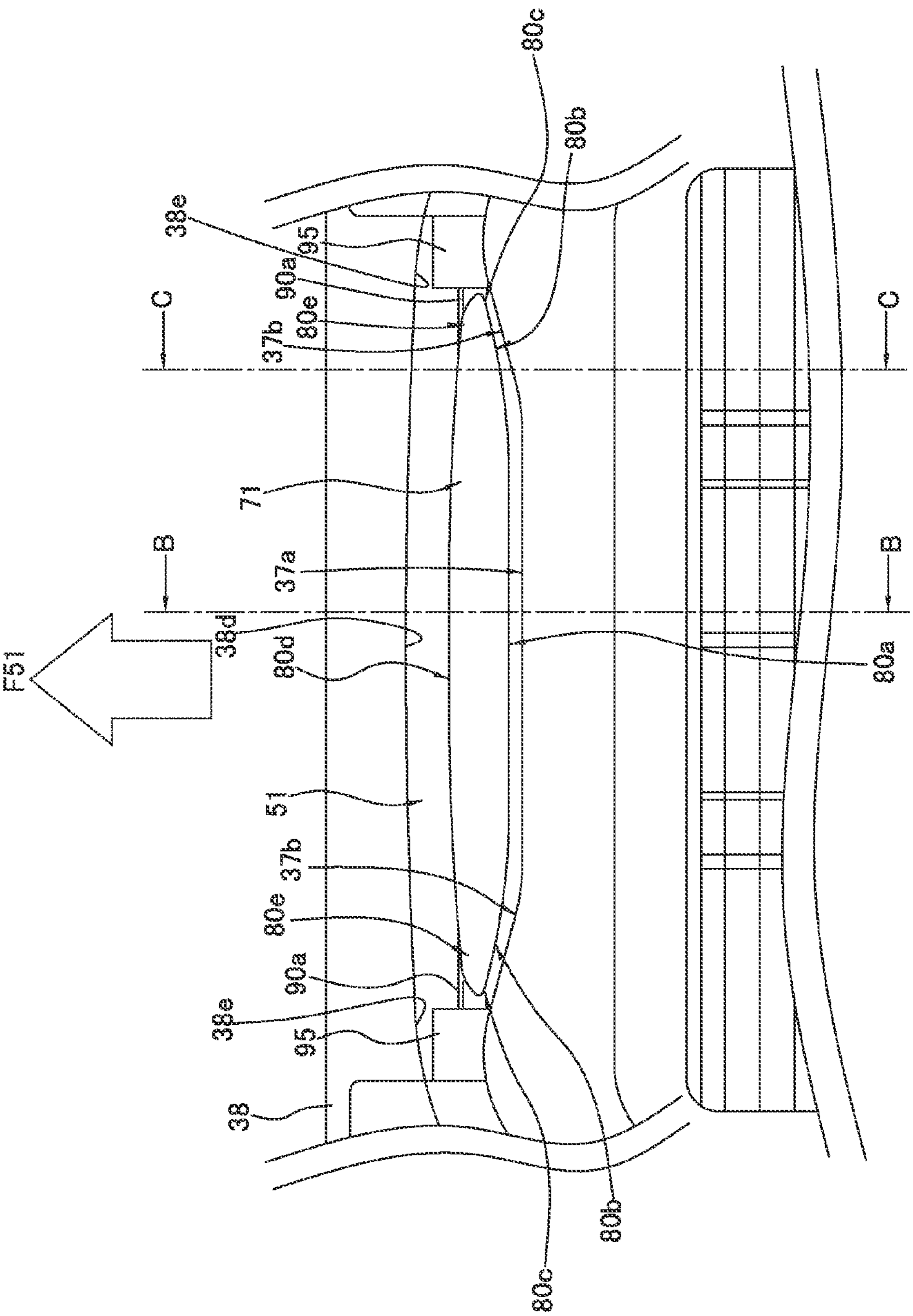
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FIG. 11

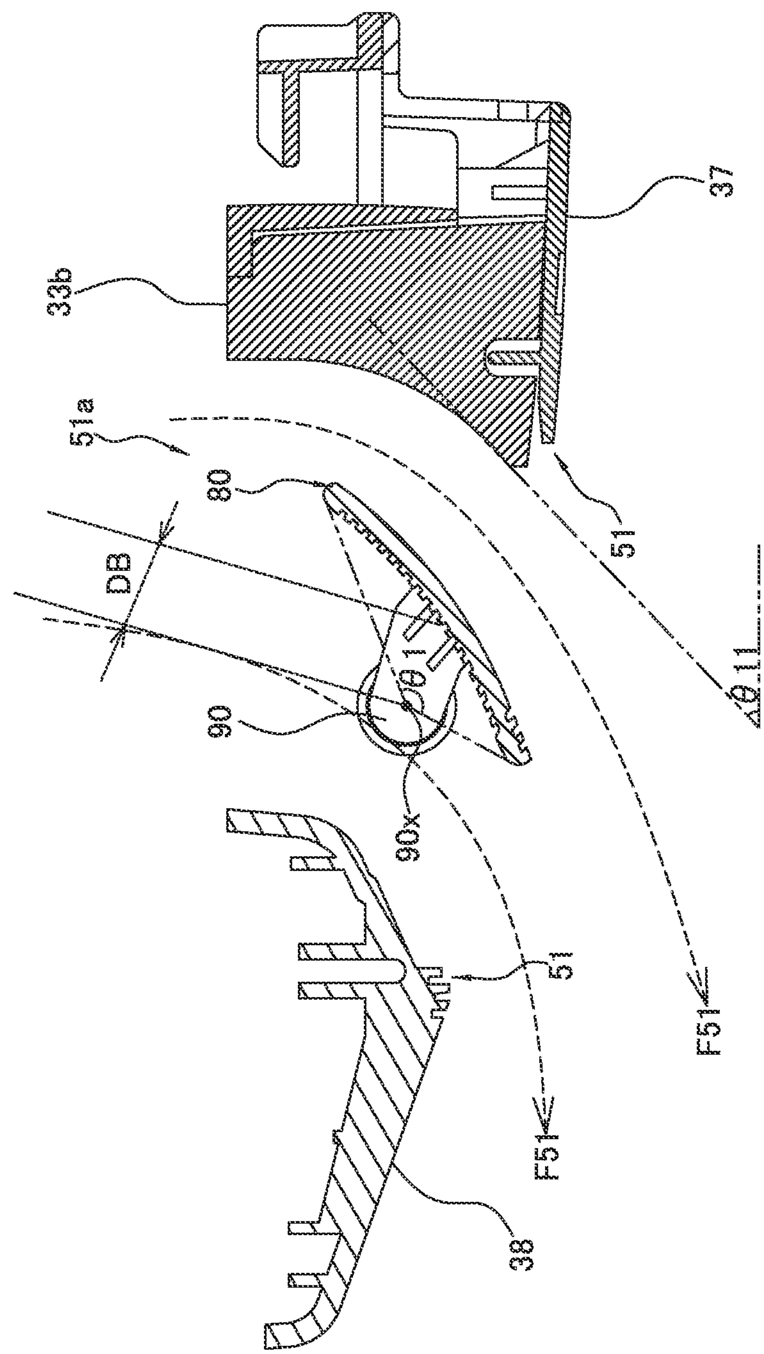


FIG. 12

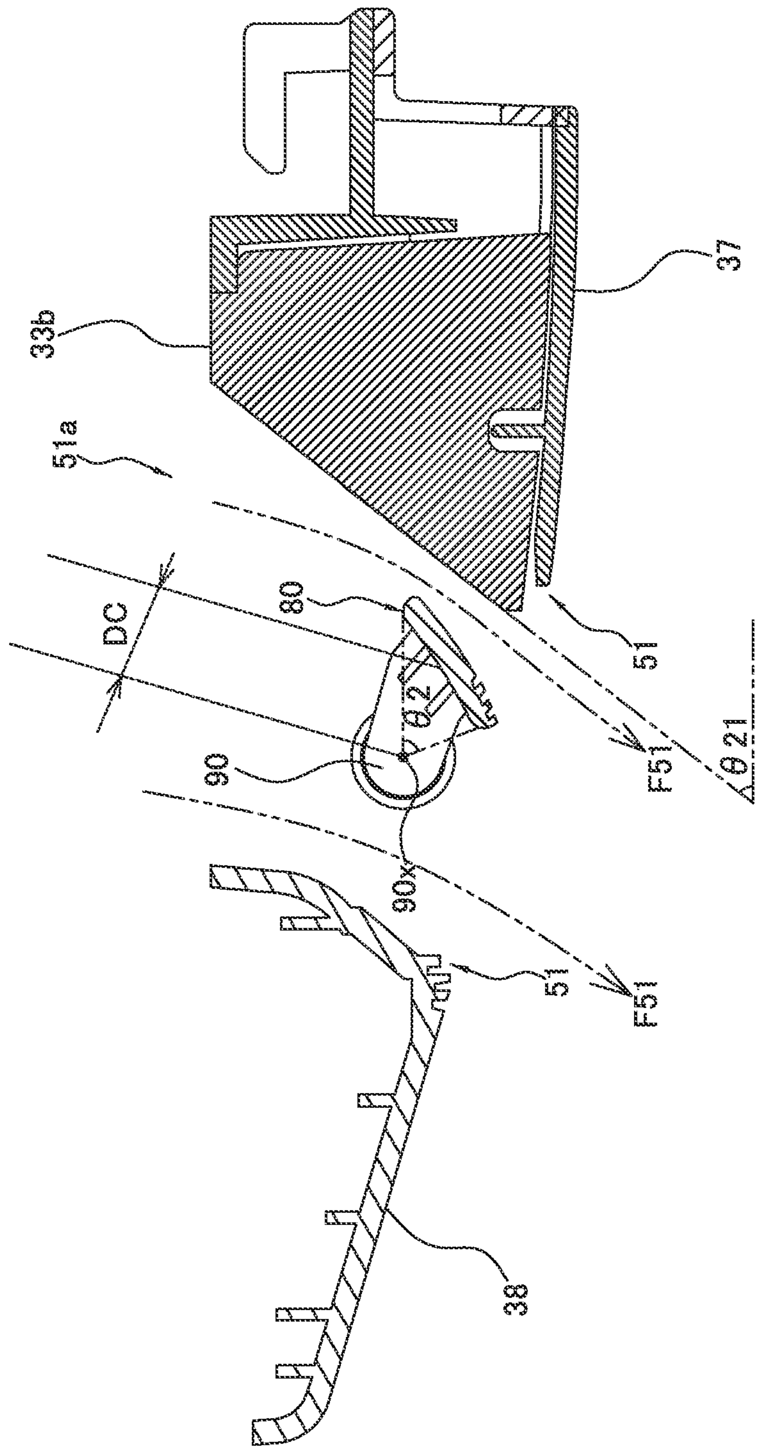


FIG. 13

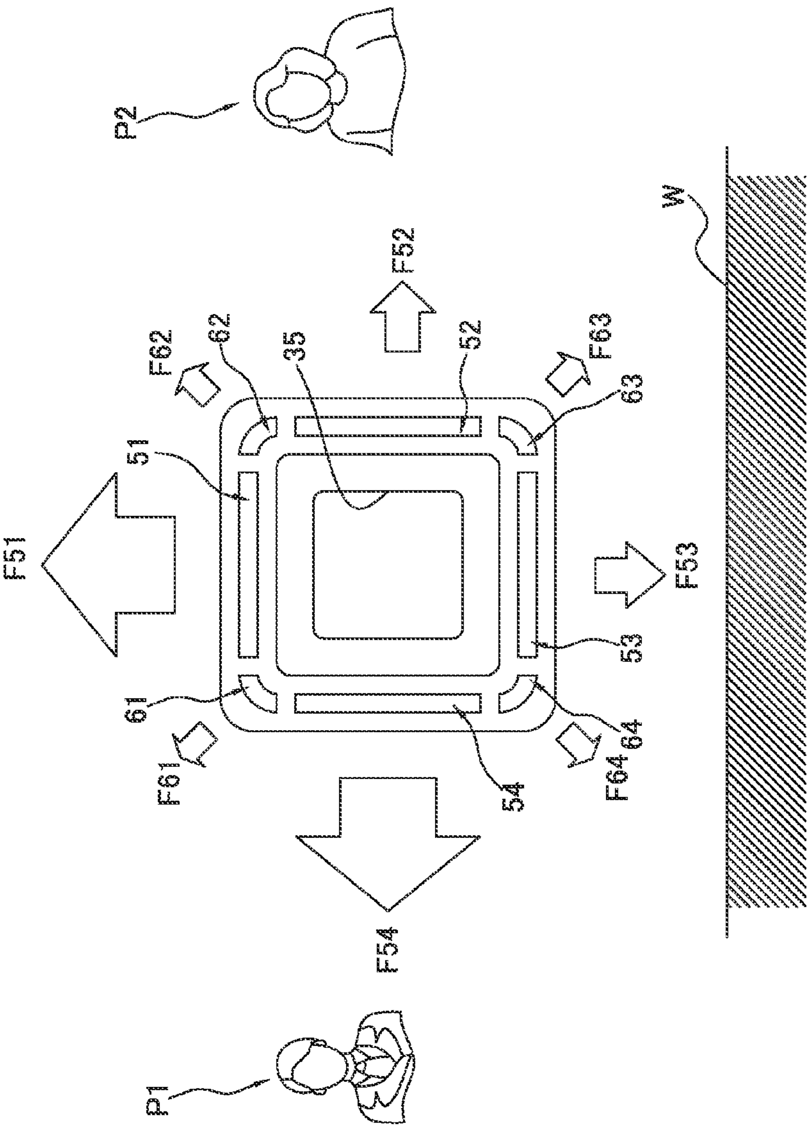


FIG. 14

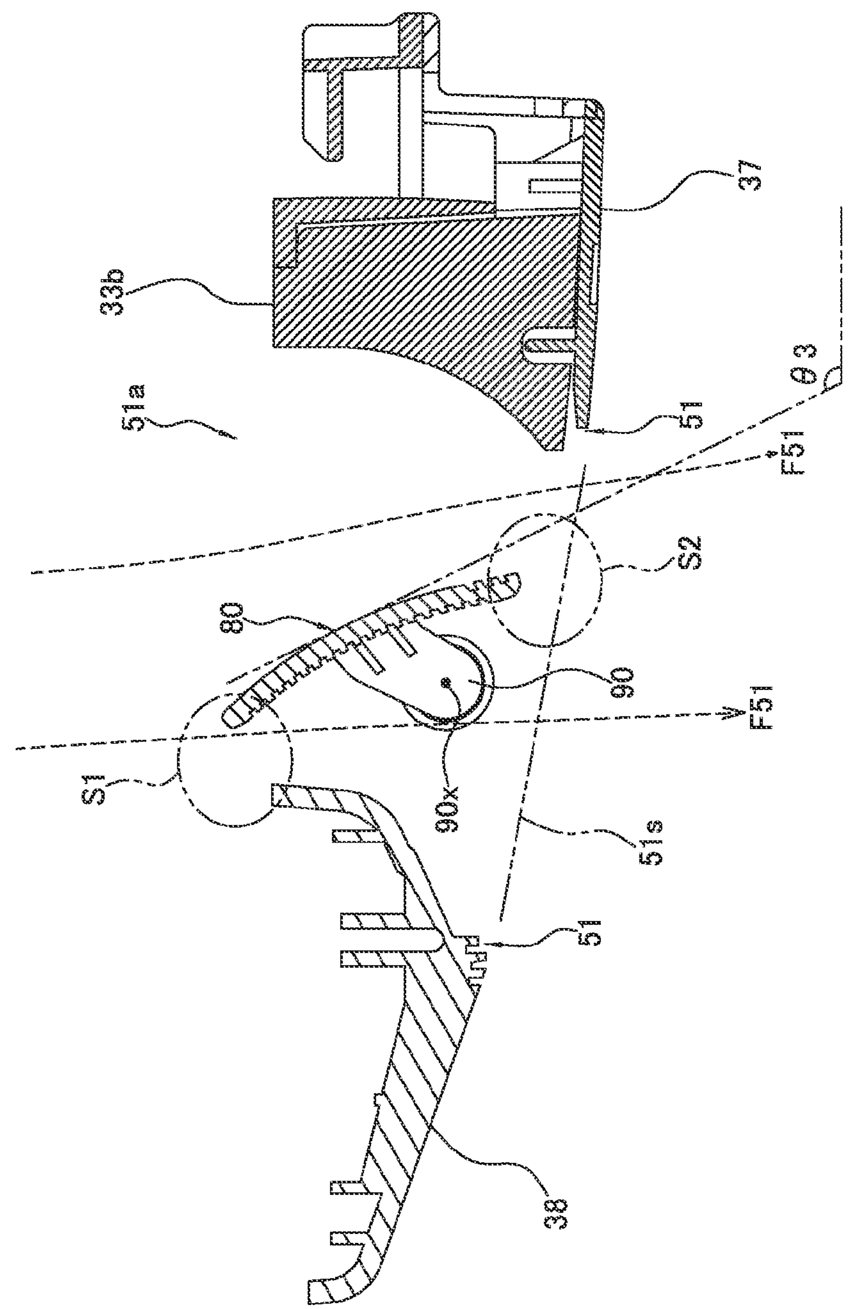
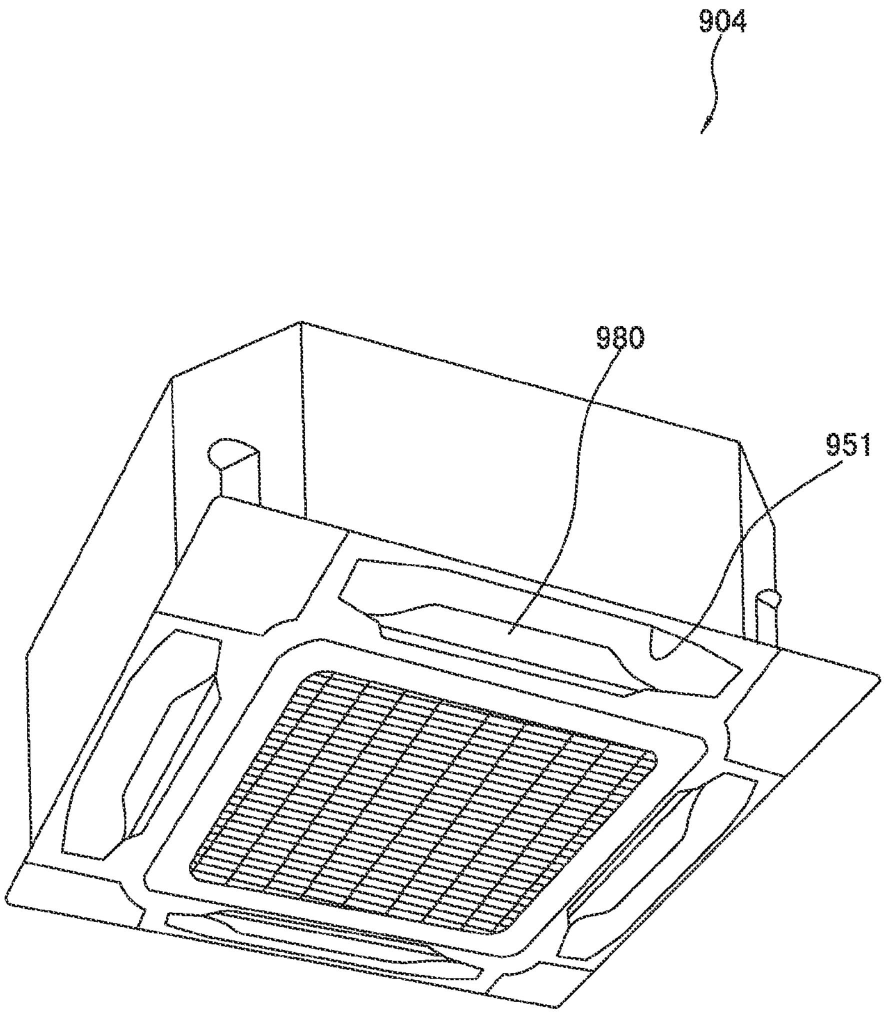
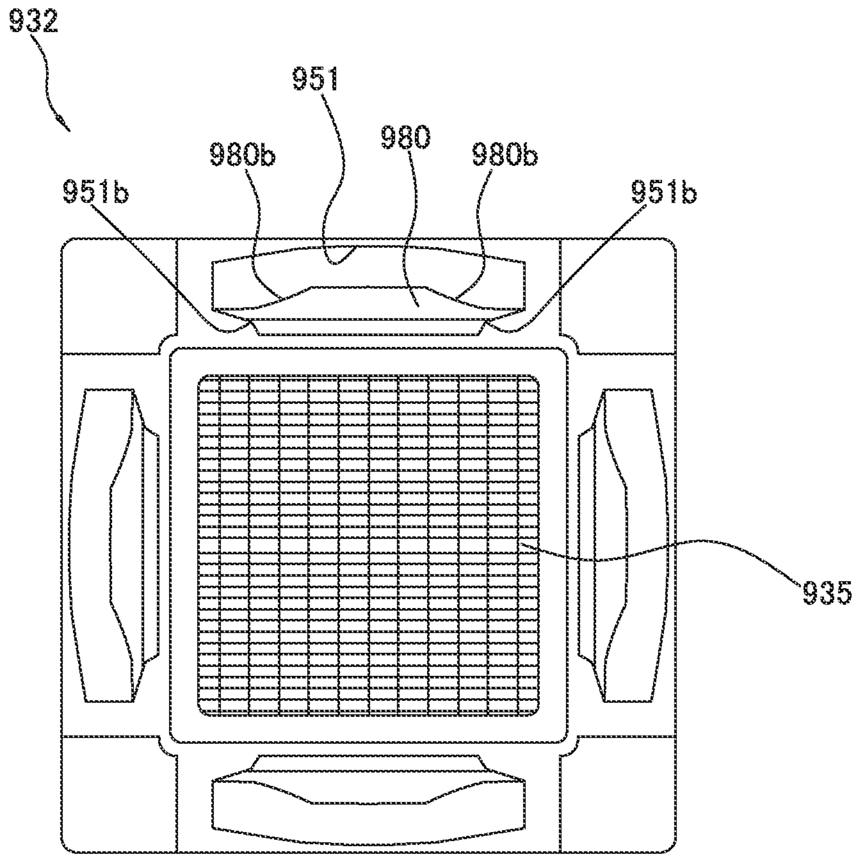


FIG. 15



(PRIOR ART)
FIG. 16



(PRIOR ART)
FIG. 17

INDOOR UNIT OF AIR CONDITIONING APPARATUS

CROSS-REFERENCE TO RELATED APPLICATIONS

This U.S. National stage application claims priority under 35 U.S.C. §119(a) to Japanese Patent Application No. 2009-254308, filed in Japan on Nov. 5, 2009, the entire contents of which are hereby incorporated herein by reference.

TECHNICAL FIELD

The present invention relates to an indoor unit of an air conditioning apparatus.

BACKGROUND ART

As an indoor unit of an air conditioning apparatus, there is, as described in Japanese Patent Publication No. 2002-349892 for example, an indoor unit of an air conditioning apparatus where air outlets are disposed around an air inlet. In this indoor unit of an air conditioning apparatus, a wide range of a target space can be conditioned by conditioned air blown out from the air outlets.

SUMMARY

Technical Problem

In the indoor unit of the air conditioning apparatus described in Japanese Patent Publication No. 2002-349892, the shape of the air outlets is a rectangle formed in such a way that the length in the lengthwise direction is much longer than the length in the width direction. For this reason, it is difficult to cause the conditioned air blown out from the air outlets to reach even farther.

With respect to this, it is also conceivable to improve the far reach of the conditioned air by relatively increasing the length in the width direction with respect to the length in the lengthwise direction in regard to the shape of the air outlets.

However, in the case of increasing the length in the width direction, this ends up increasing the size of the lower surface of the indoor unit.

With respect to this, by enlarging the shape of the air outlets toward the air inlet side, the ability of the conditioned air to have a far reach can be improved while suppressing an increase in the size of the lower surface of the indoor unit.

However, when the shape of the air outlets ends up being enlarged toward the air inlet side in this way, the problem of short-circuiting, in which the conditioned air that has been blown out from the air outlets ends up soon being sucked back in from the nearby air inlet, arises.

The present invention has been made in view of the above-described circumstances, and it is a problem of the present invention to provide an indoor unit of an air conditioning apparatus that can increase the blow distance of conditioned air blown out from an air outlet while suppressing short-circuiting and an increase in the size of the lower surface of the indoor unit.

Solution to Problem

An indoor unit of an air conditioning apparatus of first aspect of the invention is equipped with an indoor unit casing and an airflow direction adjusting member. The indoor unit casing has an air inlet and an air outlet whose edge on the air inlet side bulges toward the air inlet. The airflow direction adjusting member covers at least part of the air outlet, with an edge on the air inlet side bulging toward the air inlet side.

In this indoor unit of an air conditioning apparatus, the air outlet is formed bulging toward the air inlet side, so the blow distance of the conditioned air can be increased by increasing the air flux to make it easier to maintain the initial speed of the conditioned air passing through the neighborhood of the center of the air outlet. Additionally, the direction in which the air outlet bulges is toward the air inlet side, on an increase in the size of the lower surface of the indoor unit can be suppressed. Moreover, by allowing the air outlet to bulge toward the air inlet side in this manner, the air outlet and the air inlet end up becoming closer to each other in distance, but because the shape of the air inlet side of the airflow direction adjusting member is, like that of the air outlet, a shape bulging toward the air inlet side, it can be made easier to block the airflow heading toward the air inlet from the section of the air outlet on the air inlet side, so that short-circuiting can be suppressed. Because of this, it becomes possible to increase the blow distance of the conditioned air blown out from the air outlet while suppressing short-circuiting and an increase in the size of the lower surface of the indoor unit.

An indoor unit of an air conditioning apparatus of a second aspect of the invention is the indoor unit of an air conditioning apparatus of the first aspect of the invention, wherein the indoor unit is a ceiling-embedded type. Additionally, the indoor unit has a structure that directs the direction of airflows blown out from the neighborhoods of lengthwise direction end portions of the air outlet more downward than the direction of an airflow blown out from a lengthwise direction center of the air outlet. This directing of the flow direction of the air blown out from the neighborhoods of the lengthwise direction end portions of the air outlet more downward than the flow direction of the air blown out from the lengthwise direction center of the air outlet becomes possible with the air outlet alone, with the airflow direction adjusting member alone, or as a result of the air outlet and the airflow direction adjusting member working cooperatively.

Usually, in the neighborhoods of the lengthwise direction end portions of the air outlet, the airflows are slower than in the neighborhood of the lengthwise direction center and the air tends to flow along the ceiling surface.

With respect to this, in this indoor unit of an air conditioning apparatus, the conditioned air blown out from the neighborhoods of the lengthwise direction end portions of the air outlet can be guided in a direction further away from the ceiling surface than the conditioned air blown out from the center. Because of this, ceiling dirtying can be suppressed.

An indoor unit of an air conditioning apparatus of a third aspect of the invention is the indoor unit of an air conditioning apparatus of the second aspect of the invention, wherein the air outlet is formed in such a way that the inclination of edge surfaces in the neighborhoods of the lengthwise direction end portions is steeper than the inclination of an edge surface in the lengthwise direction center.

In this indoor unit of an air conditioning apparatus, no matter what direction the airflow direction adjusting member is facing, the flow direction of the air blown out from the neighborhoods of the lengthwise direction end portions of the air outlet can be guided in a direction away from the ceiling surface, so the effect of preventing ceiling dirtying can be more reliably obtained.

An indoor unit of an air conditioning apparatus of a fourth aspect of the invention is the indoor unit of an air conditioning apparatus of either the second aspect of the invention or the third aspect of the invention, wherein the bulge of the air outlet is formed as a result of its width direction length becoming shorter towards the end portions in the neighborhoods of the lengthwise direction end portions. The bulge of the airflow direction adjusting member is formed as a result of its width direction length becoming shorter toward the end portions in the neighborhoods of the lengthwise direction end portions.

In this indoor unit of an air conditioning apparatus, the width direction length is formed shorter toward the lengthwise direction end portions of the air outlet, so the air flux of the airflow passing through the center of the air outlet can be increased to make it easier for the airflow to maintain its initial speed, and it becomes possible to more effectively increase the blow distance of the conditioned air blown out from the air outlet.

An indoor unit of an air conditioning apparatus of a fifth aspect of the invention is the indoor unit of an air conditioning apparatus of the fourth aspect of the invention, wherein the width direction length, at the lengthwise direction end portions, of the air outlet is 40 to 80% of the width direction length at the lengthwise direction center. The air outlet has a linearly shaped section that interconnects the sections of the bulge in the neighborhoods of the lengthwise direction end portions. The width direction length, at the lengthwise direction end portions, of the airflow direction adjusting member is 20 to 60% of the width direction length at the lengthwise direction center. The airflow direction adjusting member has a linearly shaped section that interconnects the sections of the bulge in the neighborhoods of the lengthwise direction end portions.

In this indoor unit of an air conditioning apparatus, the air outlet has the linearly shaped section whose width is wider than the end portions, so the blow distance of the conditioned air can be increased. Additionally, the airflow direction adjusting member has the same shape, so the function of adjusting the airflow direction of the conditioned air passing through the air outlet can be ensured. Because of this, it becomes possible to increase the blow distance of the conditioned air while ensuring an airflow direction adjusting function.

An indoor unit of an air conditioning apparatus of a sixth aspect of the invention is the indoor unit of an air conditioning apparatus of the fourth aspect of the invention or the fifth aspect of the invention, wherein the degree of bulging of the air outlet toward the air inlet side is at least greater than the degree of bulging of the air outlet toward the opposite side of the air inlet side. The degree of bulging of the airflow direction adjusting member toward the air inlet side is at least greater than the degree of bulging of the airflow direction adjusting member toward the opposite side of the air inlet side.

The speed of the air blown out from the air outlet becomes lower, and it becomes easier for short-circuiting to occur, as approaching the lengthwise direction end portions of the air outlet, but this indoor unit of an air conditioning apparatus suppresses the short-circuiting because the air outlet of this indoor unit of an air conditioning apparatus is formed in such a way that the distance between the air outlet and the air inlet increases as approaching the lengthwise direction end portions, it becomes possible to more effectively increase the blow distance of the conditioned air blown out from the air outlet because the air flux of the air blown out from the center of the air outlet of this indoor unit of an air conditioning apparatus is thick and the air flux of the air blown out from the center of the air outlet of this indoor unit of an air conditioning apparatus is likely to be maintained its initial speed. Further, the degree of bulging of the airflow direction adjusting member toward the air inlet side is raised, like the shape of the air outlet, without giving the airflow direction adjusting member a shape where the air inlet side is cut out in the neighborhoods of the lengthwise direction end portions. For this reason, short-circuiting, which is caused by air leaking out from between the sections of the airflow direction adjusting member on the air inlet side in the neighborhoods of the lengthwise direction end portions and the sections of the air outlet on the air inlet side in the neighborhoods of the lengthwise direction end portions, can be suppressed.

An indoor unit of an air conditioning apparatus of a seventh aspect of the invention is the indoor unit of an air conditioning apparatus of any of the second aspect of the invention to the sixth aspect of the invention, wherein the air outlet does not have a section with a shape recessed toward the inside of the air outlet. The edge of the airflow direction adjusting member does not have a section with a shape recessed toward the inside of the airflow direction adjusting member.

This indoor unit of an air conditioning apparatus does not have a section with an inwardly recessed shape, so it becomes possible to more effectively prevent ceiling dirtying.

An indoor unit of an air conditioning apparatus of an eighth aspect of the invention is the indoor unit of an air conditioning apparatus of any of the first aspect of the invention to the seventh aspect of the invention, wherein the air inlet side of the airflow direction adjusting member is formed in such a way as to follow the air inlet side of the air outlet.

In this indoor unit of an air conditioning apparatus, short-circuiting of the air flowing toward the air inlet side from the end portions of the air outlet on the air inlet side can be more effectively prevented, and the design can also be improved in regard to the shape relationship between the air outlet and the airflow direction adjusting member.

An indoor unit of an air conditioning apparatus of a ninth aspect of the invention is the indoor unit of an air conditioning apparatus of any of the first aspect of the invention to the eighth aspect of the invention, wherein as for the air outlet in which the airflow direction adjusting member is disposed, at least four are disposed in such a way as to surround the air inlet.

In this indoor unit of an air conditioning apparatus, a wide target space capable of being conditioned can be ensured because the conditioned air is blown out in four directions.

An indoor unit of an air conditioning apparatus of a tenth aspect of the invention is the indoor unit of an air conditioning apparatus of the ninth aspect of the invention and is further equipped with continuous air outlets. The continuous air outlets are further disposed between the air outlets in addition to the air outlets in which the airflow direction adjusting members are disposed.

This indoor unit of an air conditioning apparatus is further equipped with the continuous air outlets, so it becomes possible to provide conditioned air thoroughly around the indoor unit. Additionally, when the total area in which the conditioned air is blown out becomes larger as a result of the continuous air outlets being disposed in this way, there is the concern that it will be difficult to maintain the initial speed of the conditioned air passing through the air outlets in which the airflow direction adjusting members are disposed, but even in that case, by employing a shape bulging inward in regard to the shape of the air outlets, it becomes possible to keep the extent to which the initial speed of the conditioned air from the air outlets drops small.

An indoor unit of an air conditioning apparatus of an eleventh aspect of the invention is the indoor unit of an air conditioning apparatus of any of the first aspect of the invention to the tenth aspect of the invention and is further equipped an airflow direction adjusting control unit. The airflow direction adjusting control unit adjusts the direction of the airflow blown out from the air outlet by adjusting the posture of the airflow direction adjusting member. The airflow direction adjusting control unit adjusts the posture of the airflow direction adjusting member in such a way as to close the air outlet when air conditioning operations are stopped.

In this indoor unit of an air conditioning apparatus, the inside of the air outlet is covered by the airflow direction adjusting member when air conditioning operations are stopped, so it becomes difficult to be able to see the inside of the indoor unit, and the design can be improved.

Advantageous Effects of Invention

In the indoor unit of an air conditioning apparatus pertaining to the first aspect of the invention, it becomes possible to increase the blow distance of the conditioned air blown out from the air outlet while suppressing short-circuiting and an increase in the size of the lower surface of the indoor unit.

In the indoor unit of an air conditioning apparatus pertaining to the second aspect of the invention, ceiling dirtying can be suppressed.

In the indoor unit of an air conditioning apparatus pertaining to the third aspect of the invention, the effect of preventing ceiling dirtying can be more reliably obtained.

In the indoor unit of an air conditioning apparatus pertaining to the fourth aspect of the invention, it becomes possible to more effectively increase the blow distance of the conditioned air blown out from the air outlet.

In the indoor unit of an air conditioning apparatus pertaining to the fifth aspect of the invention, it becomes possible to increase the blow distance of the conditioned air while ensuring an airflow adjusting function.

In the indoor unit of an air conditioning apparatus pertaining to the sixth aspect of the invention, the air flux of the airflow blown out from the center of the air outlet can be increased to make it easier for the airflow to maintain its initial speed, and it becomes possible to increase the blow distance of the conditioned air.

In the indoor unit of an air conditioning apparatus pertaining to the seventh aspect of the invention, it becomes possible to more effectively prevent ceiling dirtying.

In the indoor unit of an air conditioning apparatus pertaining to the eighth aspect of the invention, short-circuiting can be suppressed while improving the design.

In the indoor unit of an air conditioning apparatus pertaining to the ninth aspect of the invention, a wide target space capable of being conditioned can be ensured.

In the indoor unit of an air conditioning apparatus pertaining to the tenth aspect of the invention, conditioned air can be supplied thoroughly around the indoor unit while suppressing a drop in the blow distance of the conditioned air.

In the indoor unit of an air conditioning apparatus pertaining to the eleventh aspect of the invention, the inside of the air outlet is covered by the airflow direction adjusting member when air conditioning operations are stopped, so it becomes difficult to be able to see the inside of the indoor unit, and the design can be improved.

BRIEF DESCRIPTION OF DRAWINGS

FIG. **1** is a schematic diagram of a refrigerant circuit showing a cooling operation state of an air conditioning apparatus pertaining to an embodiment of the present invention.

FIG. **2** is an external perspective view of an indoor unit of the air conditioning apparatus.

FIG. **3** is a schematic cross-sectional view, in cross section A-O-A in FIG. **4**, of the indoor unit of the air conditioning apparatus.

FIG. **4** is a schematic cross-sectional view, as seen from above, of the indoor unit of the air conditioning apparatus.

FIG. **5** is an external configuration view, as seen from below, of a bottom plate.

FIG. **6** is an external configuration view, as seen from below, of the indoor unit of the air conditioning apparatus.

FIG. **7** is an external configuration view, as seen from below, of an inner frame decorative panel.

FIG. **8** is a cross-sectional view, as seen from the side, of an airflow direction adjusting portion.

FIG. **9** is an external configuration view, as seen from below, of an outer frame decorative panel.

FIG. **10** is an external perspective view of the airflow direction adjusting portion.

FIG. **11** is a partially enlarged external view, as seen from below, of the neighborhood of a first long-side air outlet.

FIG. **12** is a schematic cross-sectional view showing, in the neighborhood of the first long-side air outlet in cross section B-B in FIG. **11**, an example of a postural state of the airflow direction adjusting portion during independent airflow direction control or interlocking airflow direction control.

FIG. **13** is a schematic cross-sectional view showing, in the neighborhood of the first long-side air outlet in cross section C-C in FIG. **11**, an example of a postural state of the airflow direction adjusting portion during the independent airflow direction control or the interlocking airflow direction control.

FIG. **14** is a conceptual diagram of air volume suppression control.

FIG. **15** is a schematic cross-sectional view showing, in the neighborhood of the first long-side air outlet in cross section B-B in FIG. **11**, an example of a postural state of the airflow direction adjusting portion during the air volume suppression control.

FIG. **16** is an external perspective view of an indoor unit of a conventional air conditioning apparatus.

FIG. **17** is an external configuration view, as seen from below, of the indoor unit of the conventional air conditioning apparatus.

DESCRIPTION OF EMBODIMENT

A ceiling-mounted air conditioning apparatus pertaining to an embodiment of the present invention will be described below with reference to the drawings.

<1> Air Conditioning Apparatus **1**

FIG. **1** is a schematic configuration diagram of an air conditioning apparatus **1** in which an indoor unit pertaining to the embodiment of the present invention is employed.

The air conditioning apparatus **1** is a type that is installed as a result of a type of indoor unit being embedded in a ceiling, has eight air outlets, and can independently rotate and control, per airflow direction adjusting plate, the angles of inclination of airflow direction adjusting plates disposed in four of the eight air outlets. The air conditioning apparatus **1** is a split type of air conditioning apparatus, mainly has an outdoor unit **2**, an indoor unit **4**, a liquid refrigerant connection tithe **5** and a gas refrigerant connection tube **6** that interconnect the outdoor unit **2** and the indoor unit **4**, and a control unit **7**, and configures a vapor compression refrigerant circuit **10**.

<1-1> Outdoor Unit **2**

The outdoor unit **2** is installed outdoors or the like and mainly has a compressor **21**, a four-way switching valve **22**, an outdoor heat exchanger **23**, an expansion valve **24**, a liquid-side stop valve **25**, a gas-side stop valve **26**, and an outdoor fan **27**.

The compressor **21** is a compressor for sucking in low-pressure gas refrigerant, compressing the low-pressure gas refrigerant into high-pressure gas refrigerant, and thereafter discharging the high-pressure gas refrigerant.

The four-way switching valve **22** is a valve for switching the direction of the flow of the refrigerant when switching between cooling and heating. During cooling, the four-way switching valve **22** can interconnect the discharge side of the compressor **21** and the gas side of the outdoor heat exchanger **23** and also interconnect the gas-side stop valve **26** and the suction side of the compressor **21** (refer to the solid lines of the four-way switching valve **22** in FIG. **1**). Further, during heating, the four-way switching valve **22** can interconnect the discharge side of the compressor **21** and the gas-side stop valve **26** and also interconnect the gas side of the outdoor heat exchanger **23** and the suction side of the compressor **21** (refer to the broken lines of the four-way switching valve **22** in FIG. **1**).

The outdoor heat exchanger **23** is a heat exchanger that functions as a condenser of the refrigerant during cooling and functions as an evaporator of the refrigerant during heating. The liquid side of the outdoor heat exchanger **23** is connected to the expansion valve **24**, and the gas side of the outdoor heat exchanger **23** is connected to the four-way switching valve **22**.

The expansion valve **24** is a motor-driven expansion valve which, before sending the refrigerant to an indoor heat exchanger **42** (described later), can reduce the pressure of the high-pressure liquid refrigerant that has been condensed in the outdoor heat exchanger **23** during cooling and which, before sending the refrigerant to the outdoor heat exchanger **23**, can reduce the pressure of the high-pressure liquid refrigerant that has been condensed in the indoor heat exchanger **42** during heating.

The liquid-side stop valve **25** and the gas-side stop valve **26** are valves disposed in openings that connect to external devices and pipes (specifically, the liquid refrigerant connection tube **5** and the gas refrigerant connection tube **6**). The liquid-side stop valve **25** is connected to the expansion valve **24**. The gas-side stop valve **26** is connected to the four-way switching valve **22**.

The outdoor fan **27** is placed inside the outdoor unit **2** and forms an airflow that sucks in outdoor air, supplies the outdoor air to the outdoor heat exchanger **23**, and thereafter discharges the outdoor air to the outside of the unit. For this reason, the outdoor heat exchanger **23** has the function of using the outdoor air as a cooling source or a heating source to condense and evaporate the refrigerant.

<1-2> Indoor Unit **4**

In the present embodiment, the indoor unit **4** is a type of ceiling-mounted air conditioning apparatus indoor unit called a ceiling-embedded type and has an indoor unit casing **31**, an indoor fan **41**, an indoor heat exchanger **42**, a drain pan **40**, a bell mouth **41***c* and other components.

FIG. **2** is an external perspective view of the indoor unit **4**. FIG. **4** is a schematic plan view showing a state where a top plate **33***a* of the indoor unit **4** has been removed. FIG. **3** is a schematic side sectional view of the indoor unit **4** and corresponds to a cross-sectional view in a cross section indicated A-O-A in FIG. **4**.

The indoor unit casing **31** includes a casing body **31***a*, a decorative panel **32**, and airflow direction adjusting portions **70**.

As shown in FIG. **3** and FIG. **4**, the casing body **31***a* is placed so as to be inserted in an opening formed in a ceiling U of an air-conditioned room. When the casing body **31***a* is seen from above, the casing body **31***a* is a substantially octagonal box-like body in which long sides and short sides are alternately formed, and the lower surface of the casing body **31***a* is open. The casing body **31***a* has a substantially octagonal top plate **33***a* in which long sides and short sides are alternately continuously formed, a side plate **34** that extends downward from the peripheral edge portion of the top plate **33***a*, and a bottom plate **33***b* that supports the top plate **33***a* and the side plate **34** from below. The side plate **34** is configured from side plates **34***a*, **34***b*, **34***c*, and **34***d*, which correspond to the long sides of the top plate **33***a*, and side plates **34***e*, **34***f*, **34***g*, and **34***h*, which correspond to the short sides of the top plate **33***a*. A liquid-side connecting tube **5***a* and a gas-side connecting tube **6***a* for interconnecting the indoor heat exchanger **42** and the refrigerant connection tubes **5** and **6** penetrate the side plate **34***h*. As shown in FIG. **6**, which is a bottom view in a state where the decorative panel **32** and other components are not attached, a substantially quadrilateral opening is disposed in the center of the bottom plate **33***b*, plural openings are disposed around that opening, and the bottom plate **33***b* configures a lower surface of the casing body **31***a*. As shown in FIG. **3**, the bottom plate **33***b* is formed so as to widen further outward than the top plate **33***a* and the side plate **34**, and the decorative panel **32** is attached to the lower surface side (the room side) of the bottom plate **33***b*.

As shown in FIG. **3**, FIG. **4**, and FIG. **6**, inside the casing **31***a* are disposed an air inlet flow path **35***a* for taking in air from an air inlet **35** into the inside of the casing body **31***a* and air outlet flow paths **51***a*, **52***a*, **53***a*, **54***a*, **61***a*, **62***a*, **63***a*, and **64***a* that are placed so as to surround the outside of the air inlet flow path **35***a*, have shapes extending in a substantially vertical direction, and are for blowing out conditioned air into the room.

As shown in FIG. **2**, FIG. **3**, and FIG. **4**, the decorative panel **32** is placed on as to be fitted into the opening in the ceiling U. The decorative panel **32** is a plate-like body having a substantially quadrilateral shape as seen from above and is mainly fixed to the lower end portion of the casing body **31***a* as a result of being attached from the room side with respect to the bottom plate **33***b* of the casing body **31***a*. As shown in FIG. **5**, which is a bottom view of the indoor unit **4**, the decorative panel **32** is configured by a suction grill **32***a*, an inner frame decorative panel **37**, and an outer frame decorative panel **38**, and has an air inlet **35** and an air outlet **36**. In an installed state of the indoor unit **4**, the lower end of the inner frame decorative panel **37** is placed so as to be positioned a little lower than the lower end of the outer frame decorative panel **38**.

The suction grill **32***a* is a substantially quadrilateral panel placed in the center of the lower surface of the casing body **31***a*. As shown in FIG. **7**, which is a bottom view seen from the room side, the inner frame decorative panel **37** is a substantially quadrilateral frame member and is placed between the air inlet **35** and the air outlet **36**. An inside edge **37***i* of the inner frame decorative panel **37** is substantially quadrilateral and has a shape whose corner sections are rounded. The outside edge of the inner frame decorative panel **37** includes inner frame air outlet-side linear portions **37***a*, inner frame air outlet-side curved portions **37***b*, and opening-inside bulging portions **37***c*. The inner frame air outlet-side linear portions **37***a* are sections that are disposed in outside positions corresponding to the neighborhoods of the centers of the four sides of the inside edge **37***i*, are substantially parallel to the sides of the inside edge **37***i*, and extend linearly. The inner frame air outlet-side curved portions **37***b* are formed in such a way that their edges are positioned further outward as approaching the corners of the inner frame decorative panel **37**. The inner frame air outlet-side curved portions **37***b* have concave shapes recessed smoothly inward. The opening-inside bulging portions **37***c* configure the outer edges in the vicinities of the corners of the inner frame decorative panel **37** and have outwardly bulging shapes whose corners are rounded. The outer frame decorative panel **38** is placed so as to cover the outer edge of the lower surface of the casing body **31***a* and is placed on the outside of the air outlet **36**. As shown in FIG. **8**, which is a bottom view seen from the room side, an outside edge **38***j* of the outer frame decorative panel **38** is substantially quadrilateral, has a shape following the edge of the bottom plate **33***b* of the casing body **31***a*, and has rounded corners. The inside edge of the outer frame decorative panel **38** includes outer frame air outlet-side linear portions **38***d* and outer frame air outlet-side curved portions **38***e*. The outer frame air outlet-side linear portions **38***d* are sections that are disposed in inside positions corresponding to the neighborhoods of the centers of the four sides of the outside edge **38***j*, are substantially parallel to the sides of the outside edge **38***j*, and extend linearly. The outer frame air outlet-side curved portions **38***e* are formed in such a way that their edges are positioned further inward closer to the corners of the outer frame decorative panel **38**. The outer frame air outlet-side curved portions **38***e* have convex shapes that bulge gently outward. The linear sections of the outer frame air outlet-side linear portions **38***d* are formed so as to be shorter than the linear sections of the inner frame air outlet-side linear portions **37***a*, and the percentage of the outer frame air outlet-side curved portions **38***e* in the length along the inner frame is large, so a bottom view of the outer frame air outlet-side linear portions **38***d* and the outer frame air outlet-side curved portions **38***e* shows they have a shape close to that of a circle.

The air inlet **35** is a substantially quadrilateral opening disposed in the substantial center of the suction grill **32***a*. A filter **39** for removing dirt and dust in the air that has been sucked in from the air inlet **35** is disposed in the air inlet **35**. The above mentioned air inlet flow path **35***a* leads to the air inlet **35** on the inside of the casing body **31***a*.

The air outlet **36** is disposed between the inner frame decorative panel **37** and the outer frame decorative panel **38** so as to surround the periphery of the air inlet **35** and is configured from long-side air outlets **50** and short-side air outlets **60**. The long-side air outlets **50** are configured from four air outlets a first long-side air outlet **51**, a second long-side air outlet **52**, a third long-side air outlet **53**, and a fourth long-side air outlet **54** that are disposed in positions corresponding to the sides of the substantially quadrilateral shape of the air inlet **35**. The tong-side air outlets **50** are formed so as to not have edge sections facing the inside of the opening. The long-side air outlets **50** are configured in such a way that the difference in length between their lengthwise direction and their width direction, which is a direction orthogonal to the lengthwise direction, is smaller than in a conventional air outlet (in such a way that the aspect ratio of the lengths is smaller than conventionally), so the air flux of the airflows blown out from the neighborhoods of the centers of the long-side air outlets **50** can be increased to make it easier for the airflows to maintain their initial speed. The short-side air outlets **60** are configured from four air outlets—a first short-side air outlet **61**, a second short-side air outlet **62**, a third short-side air outlet **63**, and a fourth short-side air outlet **64**—that are disposed in positions corresponding to the corner sections of the substantially quadrilateral shape of the air inlet **35**. The air outlet **36** is configured in such a way that the long-side air outlets **50** and the short-side air outlets **60** are alternately arranged and placed in a substantially annular shape. The first long-side air outlet flow path **51***a*, the second long-side air outlet flow path **52***a*, the third long-side air outlet flow path **53***a*, and the fourth long-side air outlet flow path **54***a* lead respectively to the first long-side air outlet **51**, the second long-side air outlet **52**, the third long-side air outlet **53**, and the fourth long-side air outlet **54**. Further, the first short-side air outlet flow path **61***a*, the second short-side air outlet flow path **62***a*, the third short-side air outlet flow path **63***a*, and the fourth short-side air outlet flow path **64***a* lead respectively to the first short-side air outlet **61**, the second short-side air outlet **62**, the third short-side air outlet **63**, and the fourth short-side air outlet **64**.

Airflows F**51**, F**52**, F**53**, F**54**, F**61**, F**62**, F**63**, and F**64** that have been conditioned inside the indoor unit **4** are blown out, while having their blow-out direction adjusted, respectively from the first long-side air outlet **51**, the second long-side air outlet **52**, the third long-side air outlet **53**, the fourth long-side air outlet **54**, the first short-side air outlet **61**, the second short-side air outlet **62**, the third short-side air outlet **63**, and the fourth short-side air outlet **64**.

As shown in FIG. **10**, which is a cross-sectional view as seen in an axial direction, and in FIG. **9**, which is an external perspective view regarding a surface mainly facing the room side, the airflow direction adjusting portions **70** have a shape that is long in an axis-of-rotation direction. The airflow direction adjusting portions **70** function as airflow direction adjusting plates that adjust the direction of the conditioned air blown out into the air-conditioned room. In the present embodiment, the airflow direction adjusting portions **70** are not placed in the short-side air outlets **60** of the air outlet **36** and are placed only in the long-side air outlets **50**. The airflow direction adjusting portions **70** include a first airflow direction adjusting portion **71** that adjusts the direction of the conditioned air blown out from the first long-side air outlet **51**, a second airflow direction adjusting portion **72** that adjusts the direction of the conditioned air blown out from the second long-side air outlet **52**, a third airflow direction adjusting portion **73** that adjusts the direction of the conditioned air blown out from the third long-side air outlet **53**, and a fourth airflow direction adjusting portion **74** that adjusts the direction of the conditioned air blown out from the fourth long-side air outlet **54**.

As shown in FIG. **9**, each of the airflow direction adjusting portions **70** has a flap body **80** and an arm **90** that includes a rotating shaft **90***x*.

The flap body **80** is a plate-shaped member formed so as to extend in a direction substantially parallel to the rotating shaft **90***x*, and a front surface **80***x* that is a surface on the opposite side of a back surface **80***y* that is a surface on the side where the arm **90** is attached has a curved shape projecting outward. The outer edge of the flap body **80** is formed so as to not have a section with an inwardly recessed shape. As shown in FIG. **10**, in a state where the front surface **80**x is mainly facing the room side (the blow-out airflow downstream side), the flap body **80** is disposed in such a way that the distance between the flap body **80** and the rotating shaft **90**x becomes shorter as the flap body **80** becomes closer to the room side and is disposed in such a way that the distance between the flap body **80** and the rotating shaft **90**x becomes longer as the flap body **80** becomes away from the room side (heading toward the blow-out airflow upstream side). Because of this, in a case where the airflow direction adjusting portion **70** has rotated, the airflow direction adjusting portion **70** follows a trajectory that differs between one end and the other end of the flap body **80**. As shown in FIG. **10**, a concavo-convexly shaped portion **80**xa is disposed, so as to be along in the lengthwise direction of the flap body **80**, on the front surface **80**x of the flap body **80** in a section in the neighborhood of the outside end portion in a state where the front surface **80**x is mainly facing the blow-out airflow downstream side. Outside the section where the concavo-convexly shaped portion **80**xa is disposed, the front surface **80**x of the flap body **80** is configured by a smooth, substantially flat surface. Further, a flocked sheet **80**ya comprising a sheet in which a mixture of short fibers with different pile lengths is uniformly flocked is adhered to the back surface **80**y of the flap body **80**. The flocked sheet **80**ya is a section that the conditioned air from inside the casing body **31**a strikes when adjusting the blow-out airflow direction in a state where the front surface **80**x of the flap body **80** is mainly facing the blow-out airflow downstream side. The flocked sheet **80**ya can suppress the formation of dew condensation on the flap body **80**. As shown in FIG. **10**, the flocked sheet **80**ya is disposed slightly toward the inside in astute where the front surface **80**x is mainly facing the blow-out airflow downstream side. The flocked sheet **80**ya is disposed in such a way that there becomes less of a section in which the flocked sheet **80**ya and the concavo-convexly shaped portion **80**xa overlap in the plate thickness direction of the flap body **80**.

Further, as shown in FIG. **9**, which is an external perspective view seen from the front surface **80**x side, the outer edge shape of the flap body **80** includes a flap inside linear portion **80**a, flap inside curved portions **80**b, flap lengthwise direction end portions **80**c, a flap outside linear portion **80**d, and flap outside curved portions **80**e. The flap inside linear portion **80**a is positioned on the inside of the flap body **80** in a state where the front surface **80**x of the flap body **80** is facing the room side. The flap inside linear portion **80**a is the edge of a linearly shaped section extending substantially parallel to the rotating shaft **90**x direction. The flap inside linear portion **80**a is disposed in the neighborhood of the center of the flap body **80** in the direction of the rotating shaft **90**x and occupies a section of about 50% of the flap body **80** in the lengthwise direction. The flap inside curved portions **80**b are edges that gently connect the flap lengthwise direction end portions **80**c to both ends of the flap inside linear portion **80**a and have shapes gently bulging toward the outside of the flap body **80**. The flap inside curved portions **80**b occupy sections of about 25% each from the lengthwise direction end portions of the flap body **80**. The flap lengthwise direction end portions **80**c are placed in positions toward the flap outside linear portion **80**d in the width direction orthogonal to the rotating shaft **90**x direction, that is, in a direction orthogonal to both the flap inside linear portion **80**a and the flap outside linear portion **80**d. In other words, in a case where the flap body **80** is seen from the front surface **80**x side, the flap lengthwise direction end portions **80**c are disposed in such a way that the width direction distance between the flap lengthwise direction end portions **80**c and the flap inside linear portion **80**a is longer than the width direction distance between the flap lengthwise direction end portions **80**c and the flap outside linear portion **80**d. The flap outside linear portion **80**d is positioned on the outside of the flap body **80** in a state where the front surface **80**x of the flap body **80** is facing the room side. The flap outside linear portion **80**d is the edge of a linearly shaped section extending substantially parallel to the rotating shaft **90**x direction. The flap outside linear portion **80**d is also disposed in the neighborhood of the center of flap body **80** in the direction of the rotating shaft **90**x but is formed shorter than the length of the flap inside linear portion **80**a. The flap outside curved portions **80**e are edges that connect, more abruptly than the flap inside curved portions **80**b, the flap lengthwise direction end portions **80**c to both ends of the flap outside linear portion **80**d and have shapes bulging gently outward.

As shown in FIG. **10**, the arm **90** extends as far as a section beyond the rotating shaft **90**x in a direction away from the back surface **80**y of the flap body **80** in the neighborhoods of both lengthwise direction end portions of the flap body **80**. That is, as shown in FIG. **10**, the length of the arm **90** is formed longer than a distance D from the back surface **80**y of the flap body **80** to the rotating shaft **90**x. The arm **90** extends in such a way that it inclines a little more toward the outer frame decorative panel **38** side than in the plate thickness direction of the flap body **80** in a state where the majority of the front surface **80**x of the flap body **80** can be seen when the casing body **31**a is seen from below. As shown in FIG. **9**, shaft members **90**a that extend so as to follow the rotating shafts **90**x are disposed in the neighborhoods of the end portions of the arms **90** on the opposite sides of the end portions on the flap body **80** side. The arm **90** extends from a little lower side of the back surface **80**y of the flap body **80** in a state where the front surface **80**x of the flap body **80** is facing the room side and has a width that is about 30% of the width, in the neighborhood of the center, of the flap body **80**.

The placement relationship between the long-side air outlets **50** and the airflow direction adjusting portions **70** will be described later.

The indoor fan **41** is a centrifugal blower placed inside the casing body **31**a. The indoor fan **41** forms an airflow that sucks the room air through the air inlet **35** in the decorative panel **32** into the casing body **31**a and blows out the air through the air outlet **36** in the decorative panel **32** to the outside of the casing body **31**a. The indoor fan **41** has a fan motor **41**a that is disposed in the center of the top plate **33**a of the casing body **31**a and an impeller **41**b that is coupled to and driven to rotate by the fan motor **41**a. The impeller **41**b is an impeller having turbo blades and can suck air into the inside of the impeller **41**b from below and blow out the air toward the outer peripheral side of the impeller **41**b as seen from above.

The indoor heat exchanger **42** is a fin-and-tube heat exchanger that is bent so as to surround the periphery of the indoor fan **41** as seen from above and is placed inside the casing body **31**a. More specifically, the indoor heat exchanger **42** is a fin-and-tube heat exchanger called a cross-fin type that has numerous heat transfer fins placed a predetermined interval apart from each other and plural heat transfer tubes disposed in a state where they penetrate these heat transfer fins in their plate thickness direction. As described above, the liquid side of the indoor heat exchanger **42** is connected to the liquid refrigerant connection tube **5** via the liquid-side connecting tube **5***a*. The gas side of the indoor heat exchanger **42** is connected to the gas refrigerant connection tube **6** via the gas-side connecting tube **6***a*. Additionally, the indoor heat exchanger **42** functions as an evaporator of the refrigerant during cooling and as a condenser of the refrigerant during heating. Because of this, the indoor heat exchanger **42** can perform heat exchange with the air that has been blown out from the indoor fan **41**, cool the air during cooling, and heat the air during heating.

The drain pan **40** is placed on the underside of the indoor heat exchanger **42** and receives drain water produced as a result of moisture in the air condensing in the indoor heat exchanger **42**. The drain pan **40** is attached to the lower portion of the casing body **31***a*. Outlet holes **40***a*, an inlet hole **40***b*, and a drain water receiving channel **40***c* are formed in the drain pan **40**. The outlet holes **40***a* are formed in various places so as to be communicated with the air outlet **36** in the decorative panel **32**. The inlet hole **40***b* is formed so as to be communicated with the air inlet **35** in the decorative panel **32**. The drain water receiving channel **40***c* is formed on the underside of the indoor heat exchanger **42**.

The bell mouth **41***c* is placed so as to correspond to the inside of the inlet hole **40***b* in the drain pan **40** and guides the air sucked in from the air inlet **35** to the impeller **41***b* of the indoor fan.

<1-3> Control Unit **7**

As shown in FIG. **1**, a control unit **7** has an outdoor control unit **7***a* that controls the various configural devices of the outdoor unit **2**, an indoor control unit **7***b* that controls the various configural devices of the indoor unit **4**, and a controller **7***c* for receiving setting inputs from a user.

The control unit **7** performs: independent airflow direction control that independently adjusts the airflow directions of the conditioned air blown out from four air outlets—the first long-side air outlet **51**, the second long-side air outlet **52**, the third long-side air outlet **53**, and the fourth long-side air outlet **54**—of the air outlet **36** by performing control that allows the first airflow direction adjusting portion **71**, the second airflow direction adjusting portion **72**, the third airflow direction adjusting portion **73**, and the fourth airflow direction adjusting portion **74** to be moved independently, per each airflow direction adjusting portion **70**, to thereby change their rotational states; and interlocking airflow direction control that interlockingly adjusts the aforementioned airflow direction by performing control that causes all of the first airflow direction adjusting portion **71**, the second airflow direction adjusting portion **72**, the third airflow direction adjusting portion **73**, and the fourth airflow direction adjusting portion **74** to move interlockingly so that their postures have the same rotational state. Here, the controller **7***c* has an input button and other components and receives from the user an instruction to either perform the independent airflow direction control or perform the interlocking airflow direction control. Additionally, the control unit **7** performs the independent airflow direction control or the interlocking airflow direction control in accordance with the instruction to perform the independent airflow direction control or the interlocking airflow direction control that the controller **7***c* has received.

In addition to the independent airflow direction control and the interlocking airflow direction control, the control unit **7** also performs, in regard to the four air outlets—the first long-side air outlet **51**, the second long-side air outlet **52**, the third long-side air outlet **53**, and the fourth long-side air outlet **54**—of the air outlet **36**, individual air volume suppression control that most reduces the volume of air blown out from a specific long-side air outlet **51** to **54** by individually independently adjusting the rotational state of each of the airflow direction adjusting portions **70** including the first airflow direction adjusting portion **71**, the second airflow direction adjusting portion **72**, the third airflow direction adjusting portion **73**, and the fourth airflow direction adjusting portion **74** to change the posture. Here, the controller **7***c* can, like described above, receive from the user an instruction to perform the individual air volume suppression control and a designation of a specific long-side air outlet **50** of the long-side air outlets **50** selected to have the volume of air blown out from that long-side air outlet suppressed. Additionally, in a case where the controller **7***c* has received an instruction to perform the individual air volume suppression control, the control unit **7** performs the individual air volume suppression control by rotating the airflow direction adjusting portion **70** placed in the position of the specific long-side air outlet **50** in such a way that the volume of air blown out from the specific long-side air outlet **50** becomes most reduced. Here, the number of the long-side air outlets **50** whose air volumes can be suppressed by the individual air volume suppression control at the same time is two or less, and the control unit **7** prohibits the individual air volume suppression control from being performed at the same time in regard to three or more of the long-side air outlets **50**. Specifically, the control unit **7** allows the individual air volume suppression control to be continued in regard to specific long-side air outlets **50** whose designation the control unit **7** has received first and second, and the control unit **7** ignores setting inputs of the individual air volume suppression control in regard to specific long-side air outlets **50** whose designation the controller **7***c* receives thereafter. In a case where the user cancels, from the controller **7***c*, the individual air volume suppression control in regard to a specific long-side air outlet **50**, the control unit **7** can then perform the individual air volume suppression control in regard to another long-side air outlet **50**.

<Basic Actions>

Next, the actions of the air conditioning apparatus **1** during a cooling operation and a heating operation will be described.

<2-1> Cooling Action

In the refrigerant circuit **10** during cooling, the four-way switching valve **22** is in the state indicated by the solid lines in FIG. **1**. Further, the liquid-side stop valve **25** and the gas-side stop valve **26** are placed in an open state, and the opening degree of the expansion valve **24** is adjusted on as to reduce the pressure of the refrigerant.

In this state of the refrigerant circuit **10**, low-pressure gas refrigerant is sucked into the compressor **21**. In the compressor **21**, the low-pressure gas refrigerant is compressed and becomes high-pressure gas refrigerant. The high-pressure gas refrigerant is discharged from the compressor **21**. The high-pressure gas refrigerant is sent through the four-way switching valve **22** to the outdoor heat exchanger **23**. In the outdoor heat exchanger **23**, the high-pressure gas refrigerant performs heat exchange with the outdoor air, condenses, and becomes high-pressure liquid refrigerant. The high-pressure liquid refrigerant is sent to the expansion valve **24**. In the expansion valve **24**, the high-pressure liquid refrigerant has its pressure reduced and becomes low-pressure refrigerant in a gas-liquid two-phase state. The low-pressure refrigerant in the gas-liquid two-phase state is sent through the liquid-side stop valve **25**, the liquid refrigerant connection tube **5**, and the liquid-side connecting tube **5***a* to the indoor heat exchanger **42**. In the indoor heat exchanger

42, the low-pressure refrigerant in the gas-liquid two-phase state performs heat exchange with the air blown out from the indoor fan **41**, evaporates, and becomes low-pressure gas refrigerant. The low-pressure gas refrigerant is sent back to the compressor **21** through the gas-side connecting tube **6***a*, the gas refrigerant connection tube **6**, the gas-side stop valve **26**, and the four-way switching valve **22**.

<2-2> Heating Action

Next, in the refrigerant circuit **10** during heating, the four-way switching valve **22** is in the state indicated by the broken lines in FIG. **1**. Further, the liquid-side stop valve **25** and the gas-side stop valve **26** are placed in an open state, and the opening degree of the expansion valve **24** is adjusted in such a way that the expansion valve **24** reduces the pressure of the refrigerant.

In this state of the refrigerant circuit **10**, low-pressure gas refrigerant is sucked into the compressor **21**. In the compressor **21**, the low-pressure gas refrigerant is compressed and becomes high-pressure gas refrigerant. The high-pressure gas refrigerant is discharged from the compressor **21**. The high-pressure gas refrigerant is sent to the indoor heat exchanger **42** through the four-way switching valve **22**, the gas-side stop valve **26**, the gas refrigerant connection tube **6**, and the gas-side connecting tube **6***a*. In the indoor heat exchanger **42**, the high-pressure gas refrigerant performs heat exchange with the air blown out from the indoor fan **41**, condenses, and becomes high-pressure liquid refrigerant. The high-pressure liquid refrigerant is sent through the liquid-side connecting tube **5***a*, the liquid refrigerant connection tube **5**, and the liquid-side stop valve **25** to the expansion valve **24**. In the expansion valve **24**, the high-pressure liquid refrigerant has its pressure reduced and becomes low-pressure refrigerant in a gas-liquid two-phase state. The low-pressure refrigerant in the gas-liquid two-phase state is sent to the outdoor heat exchanger **23**. In the outdoor heat exchanger **23**, the low-pressure refrigerant in the gas-liquid two-phase state performs heat exchange with the outdoor air, evaporates, and becomes low-pressure gas refrigerant. The low-pressure gas refrigerant is sent through the four-way switching valve **22** back to the compressor **21**.

<3> Placement Relationship Between Long-Side Air Outlets **50** and Airflow Direction Adjusting Portions **70**

Here, the placement of the first airflow direction adjusting portion **71** in the neighborhood of the first long-side air outlet **51** will be described. The neighborhood of the second tong-side air outlet **52**, the neighborhood of the third long-side air outlet **53**, and the neighborhood of the fourth long-side air outlet **54** are the same as the neighborhood of the first long-side air outlet **51**, so description thereof will be omitted.

<3-1> Placement Relationship as Seen from Below

FIG. **11** is a partially enlarged external view, as seen from below, of the neighborhood of the first long-side air outlet **51**.

When the indoor unit **4** is seen from below, the first airflow direction adjusting portion **71** and airflow direction adjusting drive units **95** are placed on the inside of the first long-side air outlet **51**.

The airflow direction adjusting drive units **95** are disposed on the insides of both lengthwise direction ends of the first long-side air outlet **51** and on the outsides of both lengthwise direction ends of the first airflow direction adjusting portion **71**. The airflow direction adjusting drive units **95** are connected to the first airflow direction adjusting portion **71** via the shaft members **90***a* extending so as to follow the rotating shafts **90***x* from the arms **90** of the first airflow direction adjusting portion **71** and apply a driving force for causing the first airflow direction adjusting portion **71** to rotate. Specifically, the airflow direction adjusting drive units **95** and the shaft members **90***a* of the first airflow direction adjusting portion **71** configure unillustrated cam mechanisms, and drive control via the cam mechanisms is performed as a result of the control unit **7** sending to the airflow direction adjusting drive units **95** a control signal for causing the airflow direction adjusting drive units **95** to control the drive state of the first airflow direction adjusting portion **71**.

The outside edge of the first long-side air outlet **51** is configured by the outer frame decorative panel **38**, the inside edge of the first long-side air outlet **51** is configured by the inner frame decorative panel **37**, and the lengthwise direction end portions of the first long-side air outlet **51** are configured by the inside side surfaces of the airflow direction adjusting drive units **95**. The width, at the lengthwise direction end portions (the inside side surfaces of the airflow direction adjusting drive units **95**), of the first long-side air outlet **51** is formed so as to be about 60% of the width, in the neighborhood of the lengthwise direction center, of the first long-side air outlet **51**. Specifically, the outside edge of the first long-side air outlet **51** is configured by the outer frame air outlet-side linear portion **38***d* and the outer frame air outlet-side curved portions **38***e* of the outer frame decorative panel **38**. Further, the inside edge of the first long-side air outlet **51** is configured by the inner frame air outlet-side linear portion **37***a* and the inner frame air outlet-side curved portions **37***b* of the inner frame decorative panel **37**. Because of this, the first long-side air outlet **51** has, when seen from below, a shape that bulges greatly inward while bulging a little outward. The bulging of the first long-side air outlet **51** inward is formed so as to be greater than the bulging of the first long-side air outlet **51** outward.

The outer frame air outlet-side linear portion **38***d* of the outer frame decorative panel **38** is positioned in the neighborhood of the lengthwise direction center of the first long-side air outlet **51**. The outer frame air outlet-side curved portions **38***e* of the outer frame decorative panel **38** are positioned in the neighborhoods of both lengthwise direction ends of the first long-side air outlet **51** and in the neighborhoods of the outsides of the airflow direction adjusting drive units **95**.

The inner frame air outlet-side linear portion **37***a* of the inner frame decorative panel **37** is positioned in the neighborhood of the lengthwise direction center of the first long-side air outlet **51**. The inner frame air outlet-side curved portions **37***b* of the inner frame decorative panel **37** are positioned a little inside of both lengthwise direction ends of the first long-side air outlet **51** and on the insides of the airflow direction adjusting drive units **95** and in the neighborhoods between the airflow direction adjusting drive units **95** and the first airflow direction adjusting portion **71**.

The horizontal direction width between the flap outside linear portion **80***d* and the flap outside curved portions **80***e* configuring the outside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the outer frame air outlet-side linear portion **38***d* and the outer frame air outlet-side curved portions **38***e* of the outer frame decorative panel **38** configuring the outside edge of the first long-side air outlet **51** is placed so as to be substantially the same width (about 2 cm) across in the entire lengthwise direction of the first long-side air outlet **51**.

The horizontal direction width between of the flap inside linear portion **80***a*, the flap inside curved portions **80***b*, and the flap lengthwise direction end portions **80***c* configuring the inside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the inner frame air outlet-side linear portion **37***a* and the inner frame air outlet-side curved portions **37***b* of the outer frame decorative panel **38** configuring the inside edge of the first long-side air outlet **51** is placed so as to be substantially the same width (about 1 cm) across in the entire lengthwise direction of the first long-side air outlet **51** so that the mutual edges follow each other.

The width between the inside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the inside edge of the first long-side air outlet **51** is configured to be equal to or less than half of the width between the outside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the outside edge of the first long-side air outlet **51**.

<3-2> Placement Relationship in Neighborhood of Center of Airflow Direction Adjusting Portions **70**

FIG. **12** is a schematic cross-sectional view, in cross section B-B in FIG. **11**, in the neighborhood of the first long-side air outlet **51**. The posture of the airflow direction adjusting portion **70** shown in FIG. **12** is an example of the posture of the flap body **80** in a case where the independent airflow direction control or the interlocking airflow direction control is being performed.

As shown in FIG. **12**, the first long-side air outlet flow path **51***a* extends toward the airflow upstream side from the first tong-side air outlet **51**. The inside wall surface of the first long-side air outlet flow path **51***a* in the neighborhood of the first long-side air outlet **51** is configured by the bottom plate **33***b* of the casing body **31***a*. In the neighborhood of the lengthwise direction center of the flap body **80**, the inside wall surface of the first long-side air outlet flow path **51***a* has, as shown in FIG. **12**, a shape curved in such a way that the center of its radius of curvature is positioned on the rotating shaft **90***x* side, and the inside wall surface of the first long-side air outlet flow path **51***a* is formed so as to be positioned further outside closer to the first long-side air outlet **51**. In the neighborhood of the lengthwise direction center of the flap body **80**, the outside wall surface of the first long-side air outlet flow path **51***a* has, as shown in FIG. **12**, a shape curved in such a way that the center of its radius of curvature is positioned on the opposite side of the rotating shaft **90***x* side so that the distance between the outside wall surface and the inside wall surface is maintained, and the outside wall surface of the first long-side air outlet flow path **51***a* is formed so as to be positioned further outside closer to the first tong-side air outlet **51**. The neighborhood of the center of the first long-side air outlet flow path **51***a* is inclined in such a way that an angle of inclination θ**11** of the inside wall surface and the outside wall surface in the section of the first long-side air outlet **51** in the blow-out direction end portion is about 40° with respect to the horizontal direction, so that the blown-out air can be guided more outward.

The rotating shaft **90***x* is positioned on the airflow direction upstream side of the first long-side air outlet **51** positioned in the end portion of the first long-side air outlet flow path **51***a*. Further, the rotating shaft **90***x* is placed so as to be closer to the outside wall surface side of the first long-side air outlet flow path **51***a* than the inside wall surface side of the first long-side air outlet flow path **51***a*.

The arm **90** is positioned in a position substantially coinciding with, or on the airflow upstream side of, the first tong-side air outlet **51** positioned in the end portion of the first long-side air outlet flow path **51***a* even in the rotational state closest to the first long-side air outlet **51** of the rotational states of the first airflow direction adjusting portion **71**.

As shown in FIG. **12**, the width direction length, in the neighborhood of the center, of the flap body **80** is disposed in such a way that an angle θ**1** formed by a line joining together the rotating shaft **90***x* and one width direction end side of the flap body **80** and a line joining together the rotating shaft **90***x* and the width direction other end side of the flap body **80** is about 135°.

When the independent airflow direction control or the interlocking airflow direction control is being performed, the flap body **80** of the airflow direction adjusting portion **70** is swung by the airflow direction adjusting drive units **95** in the range of about +30° and about −30° taking as a reference a state where the angle of inclination of the section, in the neighborhood of the center, of the front surface **80***x* is about 30° (corresponding to FIG. **12**).

<3-3> Placement Relationship in Neighborhoods of End Portions of Airflow Direction Adjusting Portions **70**

FIG. **13** is a schematic cross-sectional view, in cross section C-C in FIG. **11**, in the neighborhood of the first long-side air outlet **51**.

In the neighborhoods of the lengthwise direction end portions of the flap body **80**, the inside wall surface of the first long-side air outlet flow path **51***a* has, as shown in FIG. **13**, a planar shape formed so as to be positioned further outside closer to the first long-side air outlet **51**, so that the shape differs from the curved shape in the neighborhood of the center. Further, in the neighborhoods of the lengthwise direction end portions of the flap body **80**, the outside wall surface of the first long-side air outlet flow path **51***a* is like the inside wall surface and has, as shown in FIG. **13**, a planar shape firmed so as to be positioned further outside closer to the first long-side air outlet **51**, so that the shape differs from the curved shape in the neighborhood of the center. The shapes of the inside wall surface and the outside wall surface of the first long-side air outlet flow path **51***a* are formed in such a way that the shape in the neighborhood of the lengthwise direction center of the flap body **80** and the shape in the neighborhoods of the lengthwise direction end portions of the flap body **80** change gradually in accordance with the lengthwise direction position of the flap body **80**. The neighborhood of the end portion of the first tong-side air outlet flow path **51***a* is inclined in such a way that an angle of inclination θ**21** of the inside wall surface and the outside wall surface in the section of the first long-side air outlet **51** in the blow-out direction end portion is about 55° with respect to the horizontal direction, so that the blown-out air can be guided more downward.

The width direction length, in the neighborhoods of the end portions, of the flap body **80** is disposed in such a way that, as shown in FIG. **13**, an angle θ**2** formed by a line joining together the rotating shaft **90***x* and one width direction end side of the flap body **80** and a line joining together the rotating shaft **90***x* and the other width direction end side of the flap body **80** is about 75°. In other words, the width direction length, in the neighborhoods of the end portions, of the flap body **80** is configured so as to be about 40% of the width direction length, in the neighborhood of the center, of the flap body **80**.

<4> Placement Relationship Between Long-Side Air Outlets **50** and Airflow Direction Adjusting Portions **70** During Shutdown

When the controller **7***c* receives from the user an instruction to shut down (a state where the cooling action and the heating action are not performed), the control unit **7** sends a control signal to the airflow direction adjusting drive units **95** to cause all of the airflow direction adjusting portions **70**—that is, all of the first airflow direction adjusting portion

71, the second airflow direction adjusting portion 72, the third airflow direction adjusting portion 73, and the fourth airflow direction adjusting portion 74—to rotate, whereby the airflow direction adjusting portions 70 are adjusted so that the centers of their front surfaces 80x face substantially vertically downward.

Because of this, during shutdown, when the indoor unit 4 is seen from below, the insides of the tong-side air outlets 50 appear most covered by the airflow direction adjusting portions 70, so that the sense of unity between the decorative panel 32 and the airflow direction adjusting portions 70 can be improved. Because of this, the design of the indoor unit 4 during shutdown can be improved, and the user can easily know that the indoor unit 4 is in a shutdown state.

<5> Placement Relationship Between Long-Side Air Outlets 50 and Airflow Direction Adjusting Portions 70 During Individual Air Volume Suppression Control

FIG. 14 is a conceptual diagram of the air volume suppression control.

When the controller 7c receives from the user an instruction to suppress the volume of air blown out from a specific long-side air outlet 50, the control unit 7 sends a control signal to the airflow direction adjusting drive units 95, of the airflow direction adjusting drive units 95, that control the rotational state of the airflow direction adjusting portion 70 disposed in the position corresponding to the specific long-side air outlet 50 instructed by the user. Because of this, the airflow direction adjusting drive units 95 that have received the control signal cause the airflow direction adjusting portion 70 whose rotational state they themselves control to rotate, to thereby adjust the airflow direction adjusting portion 70 to a posture that restricts the volume of air blown out from the long-side air outlet 50 specified by the user. For example, as shown in FIG. 14, in a case where the indoor unit 4 is placed near a wall surface W a room and near a user P1 and a user P2, when the controller 7c receives an instruction to suppress the volume of air blown out toward the user P2, the control unit 7 performs the individual air volume suppression control to reduce the volume of the airflow F53 blown out from the third long-side air outlet 53 toward the wall surface W and to also reduce the volume of the airflow F52 blown out from the second long-side air outlet 52 toward the user P2. Because of this, useless provision of conditioned air toward the wall surface W where there is no user can be reduced, and the air volume desired by the user P2 can be realized. For example, the instruction given by the user P2 may include a case where the user P2 wants to reduce the sensation of a draft or a case where the user P2 feels too cool or too warm due to cooling or heating.

FIG. 15 is a cross-sectional view, corresponding to cross section B-B in FIG. 11, showing an example of the inclined state of the airflow direction adjusting portion 70 during the individual air volume suppression control.

The flap body 80 on which the individual air volume suppression control is performed is adjusted by the airflow direction adjusting drive units 95 in such a way that the front surface 80x faces the airflow upstream side of the first long-side air outlet flow path 51a. Specifically, the flap body 80 is adjusted by the airflow direction adjusting drive units 95 in such a way that an angle of inclination θ3 (an inside angle) of the section, in the neighborhood of the center, of the front surface 80x with respect to a horizontal plane is about 110° (which corresponds to FIG. 15). Because of this, the volume of air blown out from the long-side air outlet 50 on which the individual air volume suppression control has been performed can be reduced. The angle of inclination during the individual air volume suppression control is finely adjusted in the range of +5° and −5° from the angle of about 110°.

In a state where the individual air volume suppression control has been performed, a gap of about 5 mm to 10 mm is ensured (in the section indicated by S1 in FIG. 15) between the wall surface of the first long-side air outlet flow path 51a on the outer frame decorative panel 38 side and the end portion on the upper side of the flap body 80, so that a little blow-out air flows through there.

Further, in a state where the individual air volume suppression control has been performed, the end portion on the lower side of the flap body 80 (the section indicated by S2 in FIG. 15) is positioned more on the airflow upstream side in the first long-side air outlet flow path 51a than the first long-side air outlet 51. Because of this, substantially the entire periphery of the flap body 80 can be enveloped by the conditioned air whose temperature has been adjusted inside the indoor unit 4, and it can be made difficult for the air in the room whose temperature has not been adjusted to touch the flap body 80. For this reason, even in a state where the volume of air blown out from the long-side air outlet 50 has been reduced by the individual air volume suppression control, it can be made difficult for the room air whose temperature has not been adjusted to reach the flap body 80, and the formation of dew condensation on the flap body 80 can be suppressed.

<6> Characteristics of Present Embodiment

(1)

In an indoor unit of a conventional air conditioning apparatus, for example, like in an indoor unit 904 shown in FIG. 16, air outlets 951 have quadrilateral shapes, and flap bodies 980 also have quadrilateral shapes so as to correspond to the air outlets. For this reason, large air resistances from the wall surfaces of the air outlets 951 end up acting on the airflows blown out from the neighborhoods of the centers of the air outlets 951.

With respect to this, in the indoor unit 4 of the air conditioning apparatus 1 of the present embodiment, the width of the sections in the lengthwise direction centers of the long-side air outlets 50 is formed so as to become larger. For this reason, the air flux of the airflows passing through and blown out from the neighborhoods of the centers of the long-side air outlets 50 can be increased to make it easier for the airflows to maintain their initial speed, and the blow distance of the conditioned air can be increased.

(2)

In the indoor unit 4 of the air conditioning apparatus 1 of the present embodiment, in the neighborhood of the center of the first long-side air outlet flow path 51a etc., the angle of inclination of the inside wall surface and the outside wall surface in the neighborhood of the air outlet with respect to a horizontal plane is configured to become smaller compared to the neighborhoods of the end portions of the first long-side air outlet flow path 51a etc. Because of this, the air blown out from the neighborhood of the center of the first long-side air outlet flow path 51a etc. can be caused to reach farther.

(3)

In a conventional type of indoor unit that is installed so as to be embedded in a ceiling and where the air outlet for the conditioned air and the ceiling surface are near each other, an airflow arises along the ceiling surface when the conditioned air is blown out in a substantially horizontal direction, and the ceiling surface easily becomes dirty along the airflow. Particular in the neighborhoods of both lengthwise direction end portions of the air outlet, airflow turbulence arises and the dirtiness becomes pronounced.

With respect to this, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the flow direction of the air blown out from the neighborhood of the center of the first long-side air outlet flow path **51***a* etc. is a direction more along the ceiling U surface than the flow direction of the air blown out from the neighborhoods of the ends portions of the first long-side air outlet flow path **51***a* etc. However, as described above, the airflow blown out from the neighborhood of the center of the first long-side air outlet flow path **51***a* etc. has increased air flux and easily maintains its initial speed, so turbulence in the airflow in the vicinity of the ceiling surface in the vicinity of the neighborhood of the center of the first long-side air outlet **51** etc. can be reduced. Because of this, ceiling dirtying caused by the air blown out from the neighborhood of the center of the first long-side air outlet **51** etc. can be suppressed.

(4)

In the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, in the neighborhoods of the lengthwise direction end portions of the long-side air outlets **50**, the width direction length is formed short compared to the neighborhood of the lengthwise direction center of the long-side air outlets **50**, so the airflows are slow. In the sections where the airflow is slow in this way, the air tends to flow convectively along the surface of the ceiling U.

With respect to this, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the angle of inclination of the wall surfaces, in the neighborhood of the outlet, in the neighborhoods of the lengthwise direction end portions of the first long-side air outlet flow path **51***a* etc. is formed so as to be steeper than the angle of inclination of the wall surfaces, in the vicinity of the outlet, in the neighborhood of the lengthwise direction center of the first long-side air outlet flow path **51***a* etc. Because of this, the conditioned air blown out from the neighborhoods of the lengthwise direction end portions of the long-side air outlets **50** can be guided in a direction more away from the surface of the ceiling U (more vertically downward) than the conditioned air blown out from the neighborhood of the lengthwise direction center of the long-side air outlets **50**. Because of this, ceiling dirtying arising in the neighborhoods of the end portions of the long-side air outlets **50** can be suppressed.

(5)

In the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, as described above, an increase in the width direction distance in the neighborhood of the center of the long-side air outlets **50** for increasing the air flux of the airflow passing through and blown out from the neighborhood of the center of the long-side air outlets **50** to make it easier for the airflow to maintain its initial speed is realized as a result of the long-side air outlets **50** being formed bulging so as to become closer to the air inlet **35** side.

For this reason, an increase in the horizontal direction size of the indoor unit **4** of the air conditioning apparatus **1** can be suppressed compared to a case where the long-side air outlets **50** is formed so as to bulge outward.

(6)

In the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the long-side air outlets **50** are formed so as to bulge inward, and the width between the inside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the inside edge of the first long-side air outlet **51** is configured so as to be equal to or less than half of the width between the outside edge of the flap body **80** of the first airflow direction adjusting portion **71** and the outside edge of the first long-side air outlet **51**.

For this reason, short-circuiting that can arise between the sucked-in air and the blown-out air in accompaniment with forming the long-side air outlets **50** so as to bulge inward can be suppressed.

(7)

In the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the long-side air outlets **50** have a shape in which the speed of the blown-out air becomes smaller closer to the lengthwise direction end portions and which easily produces short-circuiting.

With respect to this, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the long-side air outlets **50** are formed in such a way that their distance from the air inlet **35** increases toward the lengthwise direction end portions. For this reason, short-circuiting that can arise in the neighborhoods of the lengthwise direction end portions of the long-side air outlets **50** can be effectively suppressed.

(8)

The indoor unit of the conventional air conditioning apparatus has an air inlet **935**, air outlets **951**, and flaps **980** when a decorative panel **932** is seen from below as shown in FIG. **17**, for example. Each of the air outlets **951** has air outlet cutout portions **951***b* formed in such a way that the inside edge of the air outlet **951** is abruptly recessed. Each of the flaps **980** has flap cutout portions **980***b* formed in such a way that the outside edge of the flap **980** is abruptly recessed. In this case, the airflow becomes turbulent because the flow direction of the airflows in the flap cutout portions **980***b* and the flow direction of the airflow in the section outside the flap cutout portions **980***b* differ, and there are cases where dew condensation forms on the flap cutout sections **980***b* and in their vicinities and on the edge of the air outlet **951** in the neighborhoods thereof.

With respect to this, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the flap bodies **80** of the airflow direction adjusting portions **70** are not given a shape where the air inlet **35** side is cut out in the neighborhoods of the lengthwise direction end portions; rather, the degree of bulging of the flap bodies **80** of the airflow direction adjusting portions **70** on the air inlet **35** side is raised so as to follow the shape of the long-side air outlets **50**. For this reason, there is no abrupt change in the flow direction of the air, airflow turbulence can be suppressed, and the formation of dew condensation can be reduced.

(9)

Airflow adjusting flaps in conventional indoor units have not employed a configuration where the airflow adjusting flap covers the air outlet so as to follow the edge of the air outlet even during shutdown, so the user in the room has been able to see the inside of the indoor unit through uneven gaps or the like between the air outlet and the airflow adjusting flap, and the design of the airflow adjusting flap has been poor.

With respect to this, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, during shutdown, the widest area of the insides of the long-side air outlets **50** are covered by the airflow adjusting portions **70** when the indoor unit **4** is seen from below, and it is difficult for the user in the room to be able to see the inside of the indoor unit **4**. Moreover, the outer edges of the flap bodies **80** have a shape following the edges of the long-side air outlets **50**, and the sense of unity between the decorative panel **32** and the airflow direction adjusting portions **70** can be improved. Because of this, the design of the indoor unit **4** during shutdown can be improved.

(10)

In the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, the long-side air outlets **50** and the short-side air outlets **60** are alternately arranged and placed so as to surround the air inlet **35**. Because of this, the conditioned air can be provided thoroughly around the indoor unit **4**.

Compared to a type of indoor unit where only the long-side air outlets **50** are disposed and where the short-side air outlets **60** are not disposed, by disposing the short-side air outlets **60**, the total area and the number of places where the conditioned air is blown out become larger, and there is the concern that the initial speed of the conditioned air passing through the long-side air outlets **50** in which the airflow direction adjusting portions **70** are disposed will end up dropping.

However, even in this case, in the indoor unit **4** of the air conditioning apparatus **1** of the present embodiment, by employing, in regard to the shape of the long-side air outlets **50**, a shape where the width in the neighborhood of the center bulges, the extent to which the initial speed of the conditioned air from the long-side air outlets **50** drops can be kept small.

<7> Other Embodiments

(A)

In the above embodiment, a case where the width, at the lengthwise direction end portions, of the first long-side air outlet **51** etc. is formed so as to be about 60% of the width, in the neighborhood of the lengthwise direction center, of the first long-side air outlet **51** etc. was taken as an example and described.

However, the present invention is not limited to this; provided that the width is 40% to 80%, for example, effects preferred from the standpoints of design and suppressing short-circuiting can be obtained.

(B)

In the above embodiment, a case where the width direction length, in the neighborhoods of the end portions, of the flap body **80** is configured to be about 40% of the width direction length, in the neighborhood of the center, of the flap body **80** was taken as an example and described.

However, the present invention is not limited to this; provided that the width is 20% to 60%, for example, effects preferred from the standpoints of design and suppressing short-circuiting can be obtained.

(C)

In the above embodiment, the indoor unit **4** that blows out conditioned air in eight directions was taken as an example and described.

However, the present invention is not limited to the above embodiment and may also have a configuration where, for example, in the above embodiment, the short-side air outlets **60** are not disposed and the blow-out directions are only those of the four long-side air outlets **50**. The other embodiment may have the two long-side air outlets.

INDUSTRIAL APPLICABILITY

The present invention can increase the blow distance of the conditioned air blown out from the air outlet while suppressing short-circuiting and an increase in the size of the lower surface of the indoor unit, so the present invention is particularly useful in an indoor unit of air conditioning apparatus.

What is claimed is:

1. An indoor unit of an air conditioning apparatus, the indoor unit comprising:

an indoor unit casing having an air inlet and an air outlet, the air outlet having an edge on an air inlet side forming a bulge toward the air inlet; and

an airflow direction adjusting member covering at least part of the air outlet, the airflow direction adjusting member having an edge on the air inlet side forming a bulge toward the air inlet,

the air outlet being formed such that an inclination of edge surfaces of the air outlet in the neighborhoods of the lengthwise direction end portions with respect to a horizontal plane is steeper than an inclination of an edge surface of the air outlet in a lengthwise direction center at the downstream most end of the air outlet with respect to the horizontal plane,

the air outlet being formed such that a degree of curvature of edge surfaces on the air inlet side in the neighborhood of the lengthwise direction center is higher than a degree of curvature of edge surfaces on the air inlet side in the lengthwise direction end portions,

a direction of airflow blown out from neighborhood of the lengthwise direction end portions of the air outlet being directed more downward than a direction of an airflow blown out from the lengthwise direction center of the air outlet, and

the indoor unit being a ceiling-embedded type.

2. The indoor unit of an air conditioning apparatus according to claim **1**, wherein

the air outlet is formed such that, in the neighborhoods of the lengthwise direction end portions, a width direction length of the air outlet becomes shorter towards the end portions in order to form the bulge of the air outlet, and

the airflow direction adjusting member is formed such that, in the neighborhoods of the lengthwise direction end portions, a width direction length of the airflow direction adjusting member becomes shorter toward the end portions in order to form the bulge of the airflow direction adjusting member.

3. The indoor unit of an air conditioning apparatus according to claim **2**, wherein

the width direction length, at the lengthwise direction end portions, of the air outlet is 40 to 80% of the width direction length at the lengthwise direction center of the air outlet,

the air outlet has a linearly shaped section that interconnects sections of the bulge in the neighborhoods of the lengthwise direction end portions,

the width direction length, at the lengthwise direction end portions, of the airflow direction adjusting member is 20 to 60% of the width direction length at a lengthwise direction center of the airflow direction adjusting member, and

the airflow direction adjusting member has a linearly shaped section that interconnects sections of the bulge in the neighborhoods of the lengthwise direction end portions.

4. The indoor unit of an air conditioning apparatus according to claim **2**, wherein

a degree of bulging of the air outlet toward the air inlet is at least greater than a degree of bulging of the air outlet toward an opposite side relative to the air inlet, and

a degree of bulging of the airflow direction adjusting member toward the air inlet is at least greater than a degree of bulging of the airflow direction adjusting member toward an opposite side relative to the air inlet.

5. The indoor unit of an air conditioning apparatus according to claim 1, wherein

the air outlet has a substantially straight edge portion along a longitudinal direction of the air outlet, and

the edge of the airflow direction adjusting member has a substantially straight edge portion along a longitudinal direction of the airflow direction adjusting member.

6. The indoor unit of an air conditioning apparatus according to claim 1, wherein

an air inlet side of the airflow direction adjusting member is formed so as to follow the air inlet side of the air outlet.

7. The indoor unit of an air conditioning apparatus according to claim 1, wherein

the air outlet is one of at least four such air outlets disposed so as to surround the air inlet, and the airflow direction adjusting member is one of at least four such airflow direction adjusting members disposed in the at least four air outlets, respectively.

8. The indoor unit of an air conditioning apparatus according to claim 7, further comprising

additional air outlets disposed between the air outlets in which the airflow direction adjusting members are disposed, forming a continuous air outlet opening.

9. An indoor unit of an air conditioning apparatus comprising

an indoor unit casing having an air inlet and an air outlet, the air outlet having an edge on an air inlet side forming a bulge toward the air inlet;

an airflow direction adjusting member covering at least a part of the air outlet, the airflow direction adjusting member having an edge on the air inlet side forming a bulge toward the air inlet; and

an airflow direction adjusting control unit configured to adjust a direction of airflow blown out from the air outlet by adjusting a posture of the airflow direction adjusting member,

the air outlet being formed such that an inclination of edge surfaces of the air outlet in the neighborhood of lengthwise direction end portions with respect to a horizontal plane is steeper than an inclination of an edge surface of the air outlet in a lengthwise direction center at the downstream most end of the air outlet with respect to the horizontal plane,

a direction of airflow blown out from neighborhood of the lengthwise direction end portions of the air outlet being directed more downward than a direction of an airflow blown out from the lengthwise direction center of the air outlet,

the airflow direction adjusting control unit being further configured to adjust posture of the airflow direction adjusting member so as to close the air outlet when air conditioning operations are stopped, and

the indoor unit being a ceiling-embedded type.

* * * * *